

Ten-year network development plan

2014-2023

D.M. 27 febbraio 2013

Vers. 1.0 - 31.03.2014




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Introduction

This document provides the Metanodotto Alpino Ten Year Regional Network Development Plan 2014-2023 (TYNDP), based upon Decreto del Ministero dello Sviluppo Economico, 27 febbraio 2013 (referred to thereafter as "Decreto").

This plan is divided into the following sections, according to art. 2 of Decreto:

- Section 1.** Infrastructural measures to ensure system adequacy and security of supply, to face gas market development;
- Section 2.** Network consistency and highlights, including interconnection points with other TSOs (existing or expected), critical and congested situations (existing or expected) and required investments to overcome them;
- Section 3.** Recognition of infrastructures to be realized or be strengthened in the forthcoming ten years;
- Section 4.** Providing of operational coordination rules between national and international TSOs in order to:
- develop new interconnections with international partners;
 - create bidirectional transport capacity between countries (art. 8.4 of Decreto 93/2011);
- Section 5.** List of all identified projects with:
- expected costs and benefits according to art. 16 of Decreto 93/2011 and Decreto Ministeriale 23 febbraio 2013, and solutions to be implemented to minimize environmental impacts (compared to possible alternatives);
 - investments to be fulfilled, according to economical and effectiveness principles;

- investments program and deadlines, with detailed milestones and explanations in case of modified ones with respect to previous plan;

Section 6. Financial structure and economical data to support the sustainability of the plan and the fund raising system.

This TYNDP has been masterminded :

- considering infrastructural development projects already identified by the European Community;
- describing engaging rules with other countries (European and not), with shareholders, with TSOs already connected (or planned to be connected, according to future investments) to gas national networks;
- defining indicators which has to be considered to evaluate gas market development, to analyze costs and benefits due to plan achievements and to assess transport capacity increase, related to network managing constraints.

Section 1.

Infrastructural measures to ensure system adequacy and security of supply

1.1 System adequacy

1.1.1 Gas transport capacity

Metanodotto Alpino network transports approximately 55-60 millions of gas Smc every year. Table 1 listed effective volumes in the last 5 years.

Year	Annual volumes [Smc]	Percentage change over the previous year [%]
2008	58.687.976	
2009	55.167.036	-6%
2010	62.114.471	13%
2011	57.260.393	-8%
2012	56.326.381	-2%
2013	55.399.634	-2%
Average (2008 - 2013)	57.492.649	-0,9%

Table 1 - Annual volumes transported by Metanodotto Alpino network

Annual volumes are stable throughout the years, considering the two types of consumers, private ones and co-generations plants (for district heating).

The actual overcapacity of Metanodotto Alpino is appropriate to face market increase, considering an annual growing percentage of 2%, that is the usual trend in economical stable conditions. It is also possible to add additional capacity through pressure increase: actual pressure is 8,2 bar and can raise up to 12 bar (maximal pressure allowed for this kind of network).

1.1.2 Gas measurement

Metanodotto Alpino has planned investments to upgrade measurement stations (such as MID measurement systems) with data collection and transmission via telecommunication networks.

1.2 Security of supply

1.2.1 Service continuity

Network supply is insured through a unique interconnection with Snam Rete Gas pipeline located in Roure (TO) in the Chisone Valley. Metanodotto Alpino pipeline supplies 11 districts in 2 valleys near the border with France (Chisone and Susa valleys, districts are listed in Tables 2) for about 80.000 flats in these areas.

Istat Code	District name	City	Climatic area	Altitude [m slm]	Degree days	Inhabitants at 12/31/2003	Area [Km ²]
1227	Roure	Torino	F	860	3644	957	59,66
1103	Fenestrelle	Torino	F	1154	3871	597	49,04
1281	Usseaux	Torino	F	1416	4478	193	38,32
1201	Pragelato	Torino	F	1524	4640	506	89,28
1263	Sestriere	Torino	F	2035	5165	857	25,80
1074	Cesana T.se	Torino	F	1354	4385	1032	121,30
1258	Sauze di Cesana	Torino	F	1560	4694	187	78,52
1175	Oulx	Torino	F	1100	4100	2764	99,99
1259	Sauze d'Oulx	Torino	F	1509	4617	1085	17,10
1022	Bardonecchia	Torino	F	1312	3043	2987	132,31
1232	Salbertrand	Torino	F	1032	3998	500	40,88

Table 2 - List of districts supplied by Metanodotto Alpino pipeline

These areas are characterized by a distinguished seismic and hydrogeological instability, as proved by almost yearly flood (since year 2000) in these basins, with the risk of service continuity, especially in spring and fall. To clearly spell out the risk level, Metanodotto Alpino network crosses 44 times small rivers with torrential conditions.

Metanodotto Alpino management has a strong commitment to guarantee gas supply: this is the reason why company employees devote a major part of their activities to network surveillance and monitoring. **Many projects have been planned with aiming at increasing and improving transport security and continuity.**

For the same reason, the Company monitors the proper shape of the cathodic protection system, with a superior periodicity to that required by national laws. In case of detection of an area with poor cathodic protection, proceedings are immediately performed to strengthen protection system.

In 2013 an upgrade project of the **cathodic protection system** has been completed in the Oulx district. Company has already planned, for the next 3 years (starting in 2016), new investments for about € 10.000/y.

Issues coming out from seismic and hydrogeological occurrences (i.e. flood, landslides, or even human interference...) are unpredictable: they must be faced as soon as they take place. Intervention rapidity is maximum and commensurate with the seriousness of risk and to its potential impact for service continuity.

Several **measures to strengthen network security** are already planned for this year (2014): they will take place in the areas mostly affected by landslide. These actions are planned and outlined in collaboration with district and regional authorities. In any case they are designed in accordance with economical objectives and technical and environmental laws observance.

In order to implement preventative measures, extremely important in mountains areas, such as those crossed by Metanodotto Alpino network, several maintenance works are regularly planned and performed for the redelivery plants (especially for decompression devices): the goal of these activities is to replace the equipments approaching the end of their service life to guarantee security and continuity increase for the gas network.

In **Annex 1**, find the list of class planned projects.

1.2.2 Development of the gas national network as Mediterranean "hub"

The geographical location of Metanodotto Alpino network and the proximity to France (the gas network reaches Bardonecchia District,,5 km from the French boundary), makes the network a natural candidate for a potential interconnection with the French transport pipeline, to create an infrastructure, not yet existing, and to enhance connection in the gas networks between North and South Europe, as priority gas corridors stated in Regulation (EU) No 347/2013.

Possible partners or promoters, Metanodotto Alpino know-how and experience in gas network building and managing in mountain areas, could be a real base for the analysis and start up of such a project.

Sezione 2.

Gas network description and consistency

2.1 Network description

2.1.2 Length, diameter and achievement dates

Transport network features are detailed in **Annex 2**. Its layout, of about 76 Km, is drawn in **Annex 3**.

Metanodotto Alpino network starts from the regulation and measurement cabin in Roure (TO) where gas delivery takes place from the Snam Rete Gas network. The pipeline goes through the Chisone Valley and reaches Sestriere and Cesana Torinese districts and, climbing over the Bourget Mountain, also Susa Valley districts such as Oulx, Bardonecchia and Salbertrand (ref. Table 2).

Network was built through the years 90, with steel pipelines, of decreasing diameters.

Achievement dates, lengths and diameters are the followings:

- pipeline from Roure to Sestriere (through Fenestrelle, Usseaux and Pragelato districts): built in 1990, with a total length of about 33 km and a nominal diameter decreasing from DN 400 to DN 250 mm;
- pipeline from Pragelato to Sauze d'Oulx (through Bouget Mountain) and from Sauze d'Oulx to Oulx: built respectively in 1992 and 1994, with a total length of about 11 km and a nominal diameter of DN 300 mm;

- pipeline from Oulx to Beaulard (in Bardonecchia district): built in 1996, with a length of about 6 km and a nominal diameter of DN 300 mm;
- pipeline from Beaulard to Bardonecchia: built in 1998, with a length of about 5 km and a nominal diameter of DN 300 mm;
- pipeline from Oulx to Salbertrand: built in 2000, with a length of about 5 km and a nominal diameter of DN 125 mm;
- pipeline from Sestriere to Sauze di Cesana and then to Cesana Torinese: built in 2001 and 2002, with a length of about 11,5 km and a nominal diameter of DN 150 mm;
- pipeline from Cesana Torinese to Sansicario: built in 2004 and 2005, with a length of about 3 km and a nominal diameter of DN 125 mm;
- pipeline from Cesana Torinese to Sagna Longa: built in 2005, with a length of about 3 km and a nominal diameter of DN 100 mm.

2.1.2 Gas transport volumes

As already said, Metanodotto Alpino network can work at a maximum working pressure of 12 bar. Actual working pressure is 8,2 bar.

The maxim load in Roure regulation and measurement cabin is 30.000 Smc/h; there is an additional line for 10.000 Smc/h. Maximum volumes are about 20.000 Smc/h and 380.000 Smc/day.

Tables 1 listed actual volumes in the last 5 years and Table 3 listed all redelivery points.

PdR Code	Redelivery Point description	District	Distance from RN	Downstream Market
3421340101	Balma - Villaretto	Roure	> 15 Km	private
3421340104	Mentoulles - Depot - Fenestrelle	Fenestrelle	> 15 Km	private
3421340108	Laux - Pourrieres - Fraisse - Usseaux	Usseaux	> 15 Km	private
3421340112	Sucheres - Ruà - Granges - Plan - Villardamond - Pattemouche	Pragelato	> 15 Km	private
3421340170	Resort	Pragelato	> 15 Km	private
3421340173	Centrale Cogenerazione	Pragelato	> 15 Km	co-generation
3421340118	Borgata - Champlas - Sestriere	Sestriere	> 15 Km	private
3421340175	Centrale Cogenerazione	Sestriere	> 15 Km	co-generation
3421340124	Sagna Longa - Bousson - Sansicario - Cesana	Cesana Torinese	> 15 Km	private
3421340171	Impianto sportivo	Cesana Torinese	> 15 Km	private
3421340172	Centrale Cogenerazione	Cesana Torinese	> 15 Km	co-generation
3421340121	Grangesis - Sauze - Rollieres	Sauze di Cesana	> 15 Km	private
3421340174	Casa I	Sauze di Cesana	> 15 Km	private
3421340128	Clotes - Genevris - Ciao Pais - Pian della Rocca	Sauze d'Oulx	> 15 Km	private
3421340132	Corso Torino - Via Pelloussieres - Savoulx - Beaulard - Royeres	Oulx	> 15 Km	private
3421340177	Maneggio/Agrimont	Oulx	> 15 Km	private
3421340138	Plan - Romano - Oulme - Pont Ventoux	Salbertrand	> 15 Km	private

PdR Code	Redelivery Point description	District	Distance from RN	Downstream Market
3421340179	<i>Edilstrade</i>	<i>Salbertrand</i>	<i>> 15 Km</i>	<i>industrial</i>
3421340141	<i>Via Torino</i>	<i>Bardonecchia</i>	<i>> 15 Km</i>	<i>private</i>
3421340180	<i>Centrale Cogenerazione</i>	<i>Bardonecchia</i>	<i>> 15 Km</i>	<i>co-generation</i>

Table 3 - Redelivery Points of the Metanodotto Alpino network

2.2 Interconnections with other TSOs

2.2.1 Existing interconnections

As already said, Metanodotto Alpino network is connected to the Snam Rete Gas pipeline through a unique interconnection point in Roure (TO).

The regulation and measurement cabin in Roure is made up of :

- pressure reduction equipment,
- fiscal measurement device,
- regulation flow rate gear,
- odorization plant,
- telecommunication control system.

Cabins executive scheme has been defined in agree with Snam Rete Gas and the Local Fireman Head.

The fiscal measurement device is periodically submitted to metrological test. All cabins devices are equipped with operational and controlling features.

2.2.2 Expected interconnections

Metanodotto Alpino received a request to interconnect a network to be built to feed some municipalities in the Susa area (Exilles, Chiomonte, Giaglione, Venaus e Novalesa). At the moment, submitted data are insufficient to make a deep analysis of the project. Metanodotto Alpino has asked to Prototer for more informations and data, in particular to support expected gas volumes and load.

2.3 Network critical situations and potential bottlenecks

Since from the start up of the network (that means in the '90s), all critical situations that have took place were related to geological instability.

In all these cases, the prompt intervention of Metanodotto Alpino team, made up with people able to work in extreme conditions, reduced the potential service suspension to a maximum duration of 24 hours. Later interventions to re-establish standard security

levels are always made with alternative service with tanker lorries and, in any case, no more than one interruption a year (with a duration shorter than 12 hours).

Longer interruptions have taken place because of downstream interferences caused by Snam Rete Gas.

Congestion situations or bottlenecks never happened.

As a consequence of the previous paragraphs, all interventions are restricted to an effective and continuous monitoring of the geological situations (with a special focus on critical landslides) and of all weather warnings, coming from the Civil Protection. In these cases, the entire partners organization is alerted in order to be ready to intervene if an emergency situation would occur.

Section 3.

New infrastructures to realize or to be strengthened in the forthcoming ten years

3.1 Infrastructures to realize

By now, there are no defined infrastructures to realize in the forthcoming ten years.

As already said at paragraph 1.1.2, Metanodotto Alpino endorses the interconnection to French network to insure security and continuity of supply of the area; at the moment there are no elements to persuade that this project would be planned shortly.

With regards to the infrastructure to be built to interconnect the municipalities of Exilles, Chiomonte, Giaglione and Venaus (as said at Paragraph 2.2.2) with the existing network, delivered data and analysis are at a start level. Further informations will allow to define the feasibility of this project.

3.2 Infrastructures to be strengthened

Actual network overcapacity can be used to face potential energy demand coming out from market evolution in the forthcoming ten years.

In case of the new interconnection to feed Exilles, Chiomonte, Giaglione and Venaus districts with the presently expected volumes, it would be required the achievement of regulation and measurement cabin and the strengthening of the whole upstream network (surely the one of Metanodotto Alpino and maybe also the Snam Rete Gas one) in order to ensure gas supply for the area.

Section 4.

Operational coordination with national and international TSOs

All forgoing considerations can be deemed valid for this one as well.

With regard to national and international coordination, Metanodotto Alpino procedures envisages co-operation and coordination with Snam Rete Gas in all cases of services related to scheduled and extraordinary network maintenance and also for all emergency situations.

Section 5.

Identified projects

Actually only maintenance projects are scheduled. **Annex 1** provides projects list, with budget costs and planning.

Expected benefits of these projects concern mostly the enhancement of supply security and of service continuity to the benefit of all network users.

Section 6.

Financial structure

All projects listed in **Annex 1** will be financed through equity, because this projects budget is about a 10% of annual revenue: this will ensure the stability of the company performance indicators.

Annexes

<i>Annex n.</i>	<i>Document</i>	<i>Note</i>
1	Planned projects	<i>document updated to 31.03.2014</i>
2	Network features	<i>document attached to submitted request for the network reclassification pursuant to D.M. 29 settembre 2005</i>
3	General network scheme	<i>document to be downloaded on the website www.metanodottoalpino.com</i>

Annex 1.

Planned projects

Planned projects

Document updated to 31.03.2014

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	TOTAL
A - Projects to strengthen service security and supply	€ 11.120,00	€ 27.120,00	€ 20.000,00	€ 20.000,00	€ 20.000,00	€ 20.000,00	€ -	€ -	€ -	€ -	€ 118.240,00
B - Extraordinary network maintenance projects due to emergency situations	€ 35.500,00	€ 60.000,00	€ -	€ -	€ -	€ -	€ -	€ -	€ -	€ -	€ 95.500,00
C - Projects to strengthen the cathodic protection system	€ -	€ -	€ 10.000,00	€ 10.000,00	€ 10.000,00	€ -	€ -	€ -	€ -	€ -	€ 30.000,00
D - Extraordinary maintenance projects for the regulation cabins	€ 40.000,00	€ -	€ 5.000,00	€ -	€ 18.000,00	€ -	€ -	€ -	€ -	€ -	€ 63.000,00
E - Projects to upgrade measurement stations	€ -	€ 28.000,00	€ 67.000,00	€ 75.000,00	€ -	€ -	€ -	€ -	€ -	€ -	€ 170.000,00
TOTAL €/y	€ 86.620,00	€ 115.120,00	€ 102.000,00	€ 105.000,00	€ 48.000,00	€ 20.000,00	€ -	€ -	€ -	€ -	€ 476.740,00

Annex 2.

Network features

Network features

No.	Name of network	Crossed Regions	Crossed Districts	Lenght [km]	Diameter [mm]	Working pressure (specie)	Start up year
1	Loc. Balma - Villaretto	Piemonte	Roure	5,49	400	3° specie	1992
2	Mentoulles - Fenestrelle Capoluogo	Piemonte	Fenestrelle	6,68	400	3° specie	1992
3	Fenestrelle capoluogo - Fenestrelle capoluogo	Piemonte	Fenestrelle	0,97	350	3° specie	1992
4	Laux - Fraisse	Piemonte	Usseaux	2,31	350	3° specie	1992
5	Soucheres Basses - Traverses Plan	Piemonte	Pragelato	7,52	350	3° specie	1992
6	Traverses Plan - Pattedmouche	Piemonte	Pragelato	1,95	250	3° specie	1992
7	Traverses Plan - Villardamond	Piemonte	Pragelato	1,02	300	3° specie	1992
8	Borgata - Sestriere	Piemonte	Sestriere	6,26	250	3° specie	1992
9	Sestriere capoluogo - Confine comune di Sauze di Cesana	Piemonte	Sestriere	0,61	150	3° specie	2001
10	Grangesis - Rollieres	Piemonte	Sauze di Cesana	5,49	150	3° specie	2001
11	Bousson - Cesana T.se capoluogo	Piemonte	Cesana T.se	5,35	150	3° specie	2002
12	Cesana T.se capoluogo - Sagna Longa	Piemonte	Cesana T.se	2,76	100	3° specie	2005
13	Cesana T.se capoluogo - Sansicario	Piemonte	Cesana T.se	2,80	125	3° specie	2005
14	Villardamond - Col Bourget	Piemonte	Pragelato	2,33	300	3° specie	1993
15	Pian della Rocca - Sauze d'Oulx capoluogo (Viale Genevris)	Piemonte	Sauze d'Oulx	6,08	300	3° specie	1994
16	Confine con il Comune di Sauze d'Oulx - Oulx capoluogo (C.so Torino)	Piemonte	Oulx	0,93	300	3° specie	1994
17	Oulx capoluogo (C.so Torino) - Gad	Piemonte	Oulx	2,22	125	4° specie	2000
18	Pont Ventoux - Oulme	Piemonte	Salbertrand	2,71	125	4° specie	2000
19	Oulx capoluogo (C.so Torino) - Oulx capoluogo (Via Pellousieres)	Piemonte	Oulx	1,33	200	3° specie	1993
20	Oulx capoluogo (Via Pellousieres) - Beaulard paese	Piemonte	Oulx	5,03	300	3° specie	1996
21	Beaulard paese	Piemonte	Oulx	1,05	200	3° specie	1996
22	Beaulard paese - Royeres	Piemonte	Oulx	3,26	300	3° specie	1998
23	Attraversamento Dora Baltea - Bardonecchia capoluogo	Piemonte	Bardonecchia	1,91	300	3° specie	1998

Annex 3.

General network scheme

Document is available on the following website:

http://www.metanodottoalpino.com/public/schema_generale_rete.pdf