Gas quality situation in Italy - gas (natural gas and biomethane) quality specifications, laws and how it is controlled

Workshop on conformity assessment of biomethane

Delft, 2019-01-22

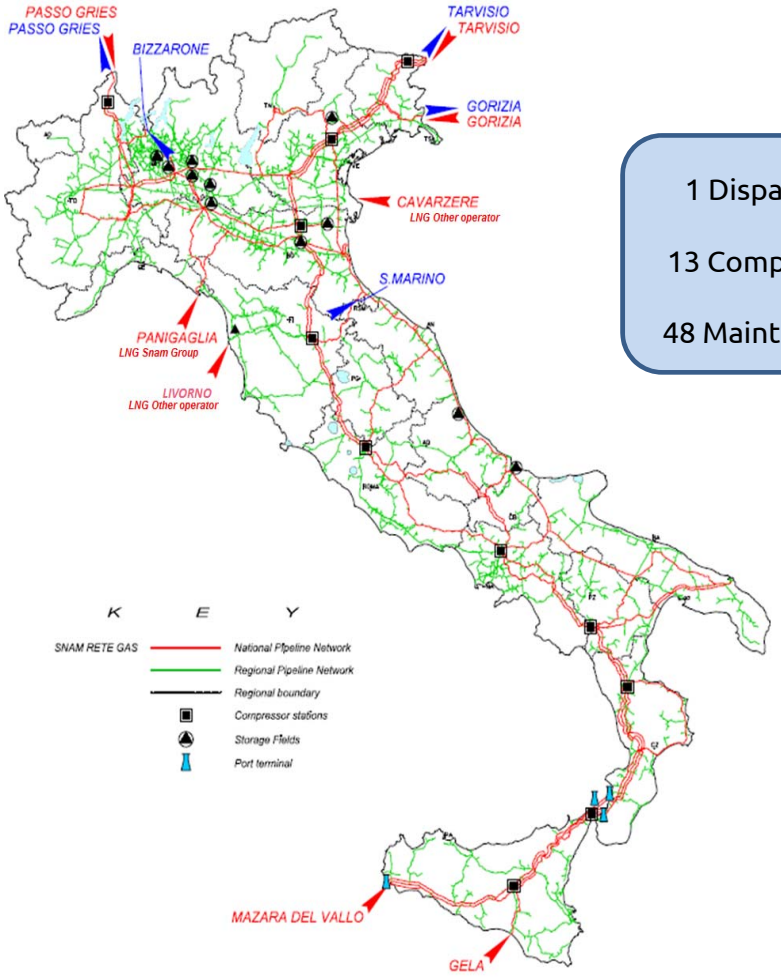
Snam: the gas transmission grid

National Transmission System

- ~9,600 Km – diameter range from ND 900 up to ND 1400, pressure range from 24 up to 75 bar
- Connecting **Entry Points** (imports & main domestic production) to storage facilities and interconnections with the Regional Transmission grid
- Remotely controlled and operated by the Dispatching center in San Donato Milanese

Regional Transmission grid

- ~22,900 Km - diameter range down to ND 80; minimum pressure level from 5 up to 24 bar
- Connecting National Network to ~ 6,900 **Redelivery Points** (city gates and industrial end users, 3rd party owned)



1 Dispatching Center

13 Compressor stations

48 Maintenance Centers

Quantities of natural gas entering SRG network

NG Inlet	MSm^3/d
Tarvisio	103.6
Passo Gries	25.9
Mazara del Vallo	57.9
Gela	14
Storage	116.7
LNG Panigaglia	1.6
LNG Cavarzere	21.1
LNG Livorno	8.8
Italian Production	13.2
Bizzarone	-0.6
Total	354.2

Biomethane in Italy: strength and uses

Biomethane is:

- Renewable
- Sustainable (CO_2 neutral)

Its utilization is:

- Flexible
- Programmable
- Efficient

Overall potential: 9Bm^3 in 2030 (15% or Italian request)

The new Italian decree on biomethane encourages the use of biomethane for transportation

The costs of the biomethane system are competitive with the ones of wind and solar energy (considering the integration costs)

Renewable gas can be a solution for the decarbonisation of heating and cooling

http://www.snam.it/it/gas-naturale/energia-del-futuro-oggi/biometano/

http://www.snam.it/it/gas-naturale/global-gas-report/

Steps of the Decree Assignment rules of Certificates (CIC)

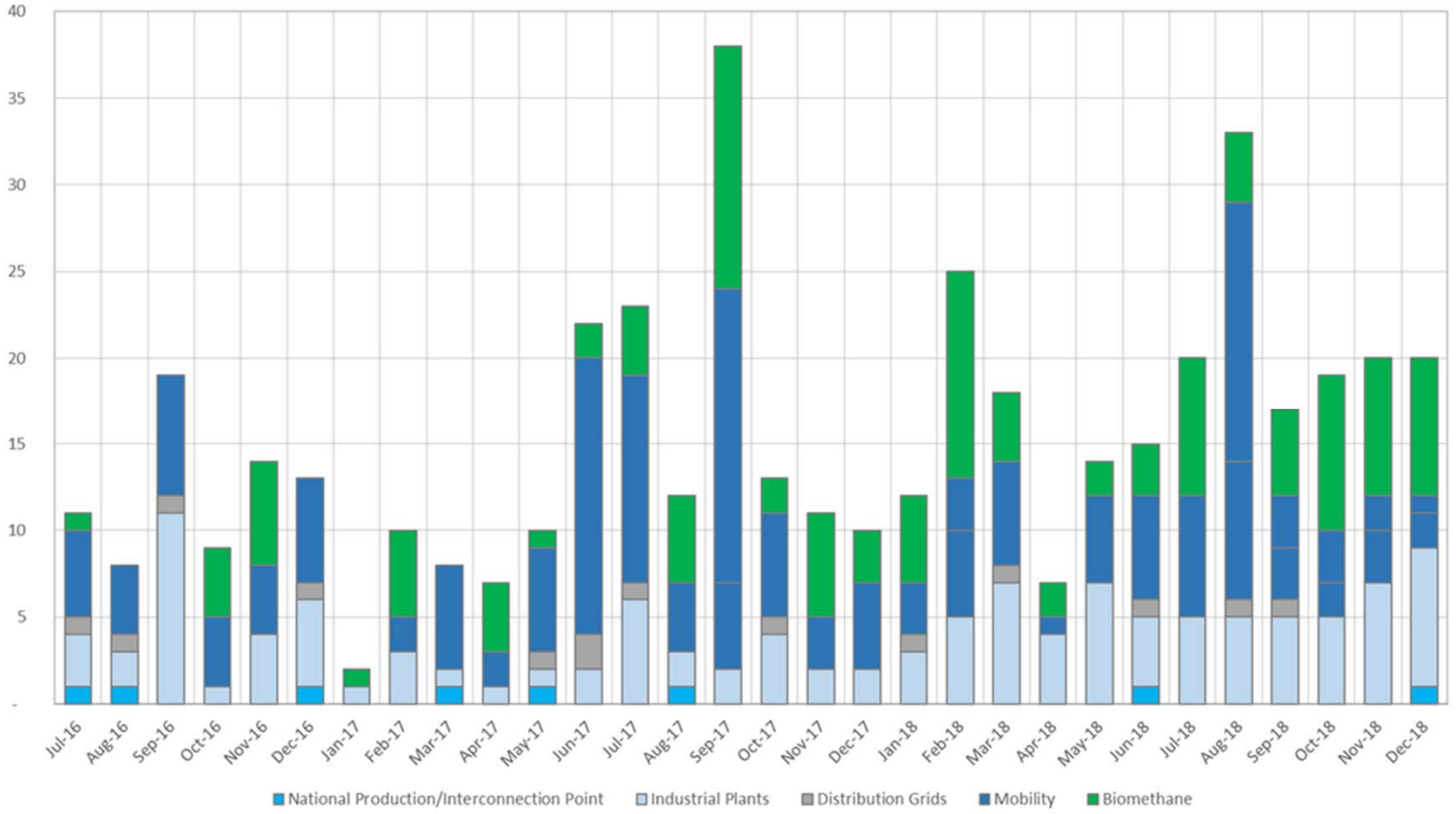
Prioritary incentives for biomethane as transport fuel

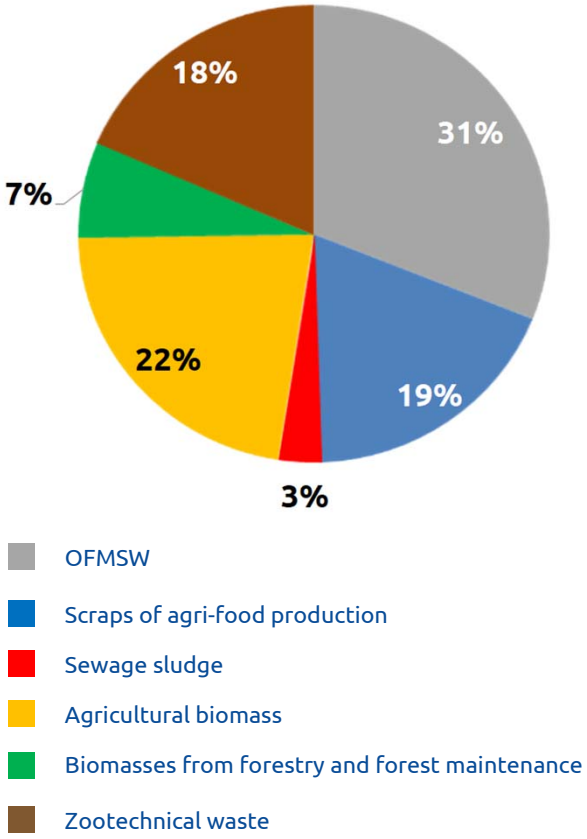
PRINCIPAL STEPS OF THE DECREE

Certificates for release of consumption (CIC)	• Biomethane produced and injected into the grid that is used for transportation is incentivized through the valorisation of certificates of release for consumption of biofuels (CIC)
Producer	• Holder of authorizations for the construction and operation of the biomethane production plant
Relevant station (CNG/LNG)	• Relevant gas refuelling station if built by the biomethane producer at his own expense (at least 51% of the construction cost)

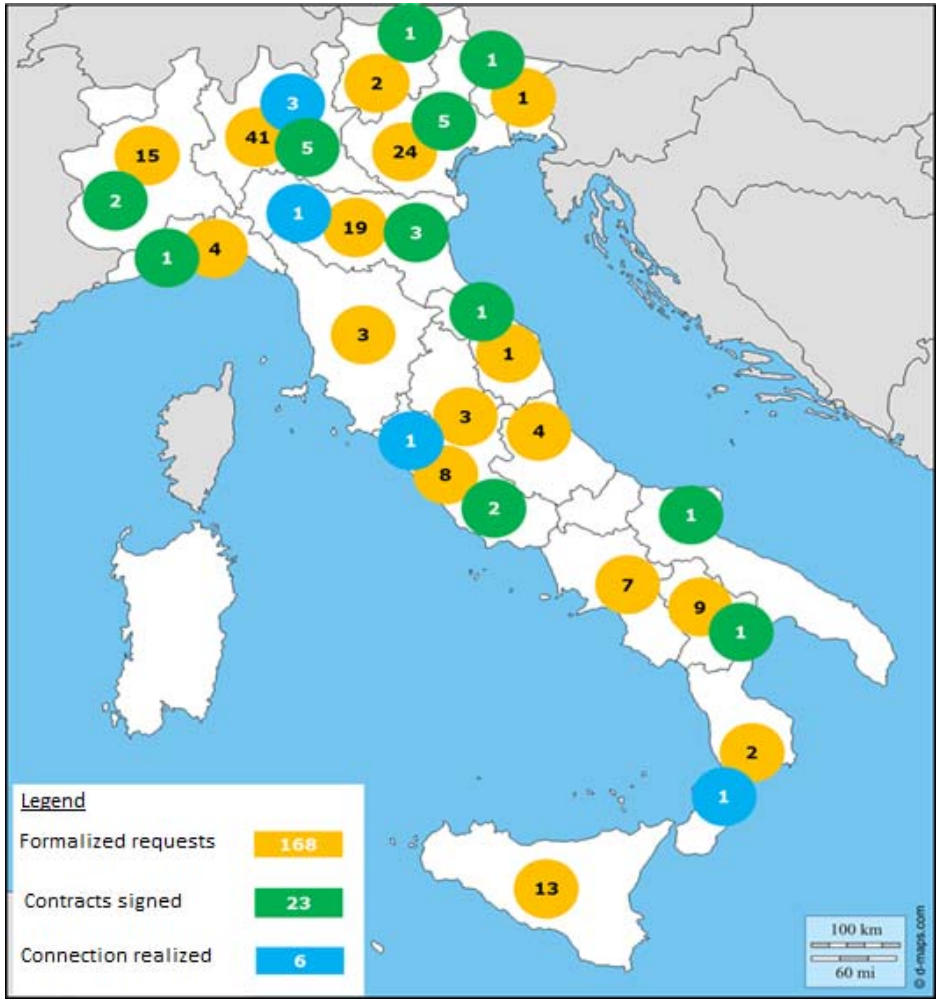
Snam and Biomethane

Connection offers issued by Snam





Snam and Biomethane



- Almost **900** preliminary contacts
  - 6.000 kSm³/d of transportation capacity requested
- More than **168** formalized connection requests
  - 2.806 kSm³/d of transportation capacity requested
- **23** connections in progress
  - 729 kSm³/d of transportation capacity
- **6** plants connected**, 3** already injecting into the NG grid**:**
  - Montello (BG) 108 kSm³/d capacity
  - Rende (CS) 11.5 kSm³/d capacity
  - S.Agata Bolognese (BO) 24 kSm³/d capacity

New 3 injections forseen in 2019 (37 kSm³ capacity)

Specifications for injection into the grid

Natural gas

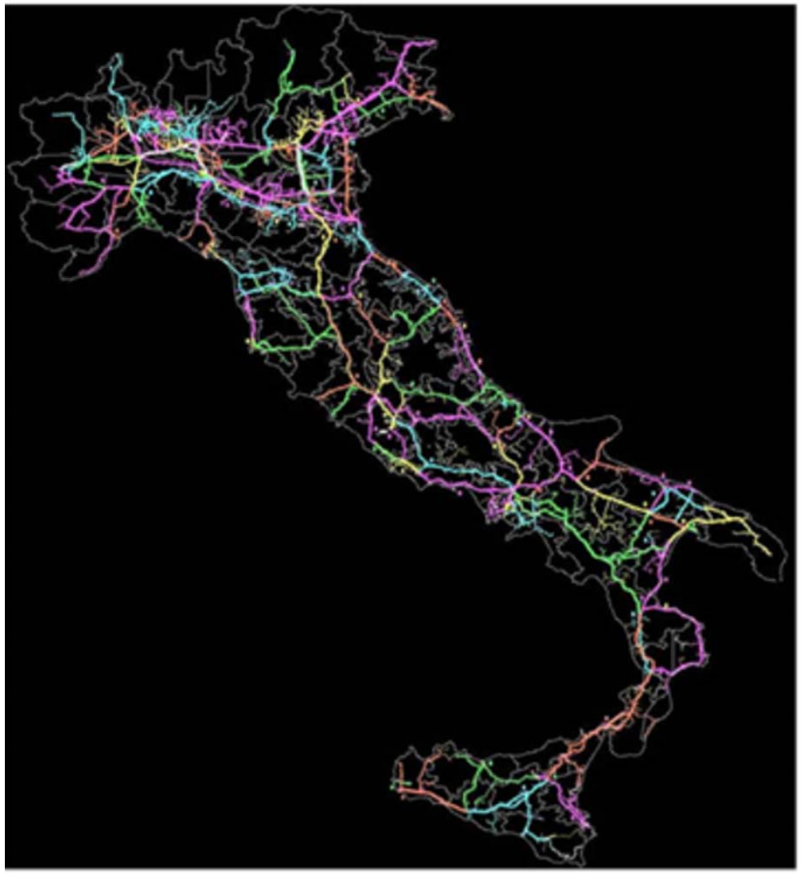
Parameter	Units	Limits (reference conditions 15°C/15°C)	Control
Gross calorific value	MJ/Sm3	34.95 ÷ 45.28	on-line
Wobbe Index	MJ/Sm3	47.31 ÷ 52.33	on-line
Relative density		0.555÷ 0.700	on-line
Water Dewpoint	°C	≤ -5	on-line
Hydrocarbon Dewpoint	°C	≤ 0	on-line
Carbon Dioxide	% mol	≤ 2.5	on-line
Oxygen	% mol	≤ 0.6	spot sample
Hydrogen sulfide	mg/m3	≤ 5	spot sample
Sulfur from mercaptans (RSH) (without odorant)	mg/m3	≤ 6	spot sample
Total sulfur (without odorant)	mg/m3	≤ 20	spot sample

Biomethane

Parameter	Units	Limits (reference conditions 15°C/15°C)	Control
Gross calorific value	MJ/Sm3	34.95 ÷ 45.28	on-line
Wobbe Index	MJ/Sm3	47.31 ÷ 52.33	on-line
Relative density		0.555÷ 0.700	on-line
Water Dewpoint	°C	≤ -5	on-line
Hydrocarbon Dewpoint	°C	to be determined only in case of LPG injection	
Carbon Dioxide	% mol	≤ 2.5	on-line
Oxygen	% mol	≤ 0.6	on-line
Hydrogen sulfide	mg/m3	≤ 5	on-line
Sulfur from mercaptans (RSH) (without odorant)	mg/m3	-	
Total sulfur (without odorant)	mg/m3	-	
Total silicon	mg/m3	≤ 1	spot sample
Carbon monoxide	% mol	≤ 0.1	spot sample
Ammonia	mg/m3	≤ 10	spot sample
Hydrogen	% Vol	≤ 1	spot sample
Fluorides	mg/m3	< 3	spot sample
Chlorides	mg/m3	< 1	spot sample
Compressor oil		*	
Dust		*	

* for these 2 parameters, the biomethane must be free, i.e. not exceed a minimum quantity that makes gas for end users unacceptable. This condition is considered respected through the use of filters that retain 99% of the solid particles> 5 µm and 99% of the liquid particles ≥ 10 µm

Control of NG quality in Snam grid



- 260 Homogeneus Areas
- 193 on-line GC to monitor GQ (Snam)
- 75 on-line GC (owned by operators)
- 9 Inferential devices (Snam)

Thank you!

Alejandra Casola
Alejandra.casolalopez@snam.it