Eurogas Sees 7% Y-o-y Increase in Europe's Gas Consumption in 2015. But Where Does This Up-tick Come From?

by Antonio Sileo and Sergio Matalucci

Eurogas wrote at the end of October that gas demand in Europe is expected to grow by 7% in 2015 compared to 2014, explaining that the first half of the year should drive most of this rise. The organisation representing national gas associations concluded that 'taking 2015 as a whole, gas demand would correspond to an EU 28 & Switzerland annual consumption of about 4760 terawatt-hours or 441 billion cubic metres.

What are the eventual reasons for this change? More importantly, does it make sense to use gas consumption as a proxy variable for industrial performance as some commentators already hypothesised and hoped for? Or shall we rather say that the uptick in consumption has simply to do with weather conditions?

Looking at the Italian case, it does indeed seem that changes in industrial production and variations in gas consumption are increasingly independent patterns. Gas is well squeezed between renewables and other fossil fuels, and its role as a backup is not only a hypothetical scenario for the future, but it is definitely a concept already applicable.

In this sense, flexible gas comes in handy to heat houses up during cold winters, especially when the wind does not blow much, and chill dwellings down during hot summers, especially when limited precipitations limit the scope of hydroelectric production.

THE ITALIAN CASE: A SIMPLE EXERCISE

CHANGES IN INDUSTRY'S OUTPUT NOT EXPLAINED BY CHANGES IN INDUSTRY'S GAS CONSUMPTION

Data published by Snam Rete Gas (Table 1) indicate that Italy increased gas imports in October from 44,106 in 2014 [1] to 50,235 GWh in 2015 (+13.9%). Due to higher withdrawals from storage, the total intake registered a more modest year-on-year 4.8% increase. However, this did not translate into an increased consumption by the industrial sector. Conversely, the industry decreased consumption of gas over the month by 7.3% with respect to the same period in 2014.

Similarly, comparing September 2014 with September 2015, imports increased by 14.5%, total intake did not register a significant year-on-year change, while industrial consumption went down by 7.9%.

For August 2015, Italy imported 37.2% more gas than in the same month one year before, total intake went up by 16%, while the industry consumed 3.4% less gas. For July 2015 with respect to July 2014, we have a similar picture, with imports going up by 19.5%, and total intake by 16.9%. On the other hand, the industry's gas consumption went down by 6.8%.

Keeping this in mind, we would expect industrial production to decrease, or at least to remain stable. But not. It is not the case. According to a statement recently released by Istat about September, 'the calendar adjusted industrial production index increased by 1.7% compared with September 2014 (calendar working days in September 2015 being the same as in September 2014).'

Similarly, 'the calendar adjusted industrial production index increased by 1.0% compared with August 2014 (calendar working days being 21 versus 20 days in August 2014). The unadjusted industrial production index increased by 4.1% compared with August 2014,' reads a separate press release about Italy's industrial production in August.

This simple evidence basically suggests three things. First, one could think that the quantity of gas consumed by the industry remains basically stable year-on-year, allowing commentators to expect the same to happen in the future. Second, movements in gas imports and total gas intakes are not related to an increase in the gas consumed by the industry. Third, changes in industry's output cannot be explained by its gas consumption. In other words, the positive correlation between gas consumption and economic growth suggested by the recent paper by Solarin and Shahbaz (2015) cannot be extended to mature economies. The paper spoke of the Malaysian case. Italy, like other mature economies, is a completely different story.

Table 1

	Import	National production	Storage systems	Total Intake	Industry (I)	Power generation (PG)	Local Distribution Networks (LDN)	I + PG + LDN	Tot. Offtake
Oct 14	44,106	6,020	-1,943	48,183	12,303	18,004	16,156	46,463	48,183
Oct 2015 (Temporary)	50,235	5,626	-5,356	50,504	11,401	16,861	21,499	49,761	50,504
Y-o-y change	13.9%			4.8%	-7.3%	-6.4%	33.1%	7.1%	
Sept 14	44,999	5,565	-7,494	43,069	12,038	18,327	11,481	41,845	43,069
Sept 15	51,545	5,471	-13,950	43,066	11,083	19,035	11,417	41,536	43,066
Y-o-y change	14.5%			-0.0%	-7.9%	3.9%	-0.6%	-0.7%	
Aug 14	37,295	6,344	-12,127	31,513	8,866	13,106	8,591	30,563	31,513
Aug 15	51,195	5,748	-20,376	36,567	8,568	18,893	8,177	35,638	36,567
Y-o-y change	37.3%			16.0%	-3.4%	44.2%	-4.8%	16.6%	
Jul 14	51,190	6,402	-17,085	40,508	11,775	16,765	10,672	39,212	40,508
Jul 15	61,170	5,729	-19,543	47,357	10,969	25,331	9,832	46,132	47,357
Y-o-y change	19.5%			16.9%	-6.8%	51.1%	-7.9%	17.6%	

Source: Snam Rete Gas, Data in million kWh (25°C combustion)

POWER GENERATION AND DISTRIBUTION: UNDERSTANDING THE CHANGES IN GAS CONSUMPTION

At this point, what are we speaking about? Going back to the data about gas consumption in July, August, September and October, data are quite self explaining.

With respect to October 2014, the power generation sector consumed 6.4% less, while local distribution networks absorbed 33.1% more. In September, consumption throughout the two sectors (power generation and local distribution networks) remained on 2014 levels. In August, the local distribution networks registered a 4.9% contraction, while the power generation registered a year-

on-year 44.2% increase. Even more stunningly, in July, local distribution networks decreased gas consumption by 7.9%, while gas consumption of the power generation registered a 51.1% growth.

Summing up, the 33.1% rise in consumption in October 2015 from the local distribution networks, the 44.2% increased amount of gas used by the power generation sector in August, and the 51.1% surge of the gas consumed by the power generation in July are the only remarkable year-on-year changes in the period July-October 2015 in comparison to the same four months in 2014.

So what are the lessons here? First, the power generation sector and the local distribution networks can register significant changes in consumption with respect to the same months of the previous year. Second, we can grow a natural suspicion about the fact that gas consumption changes have to do with weather.

WEATHER IS THE REAL PLAYER

A complete analysis of the impact of weather conditions on natural gas consumption should consider indicators like the 'heating degree days', and 'cooling degree days'. The former would capture the household energy consumption for space heating, while the latter the energy consumption for air conditioning. However, data is not available and a more approximate empirical exercise is needed. To do so, the monthly bulletins released by Italy's Defence Ministry and Air Force are a good tool to grasp the weather conditions.

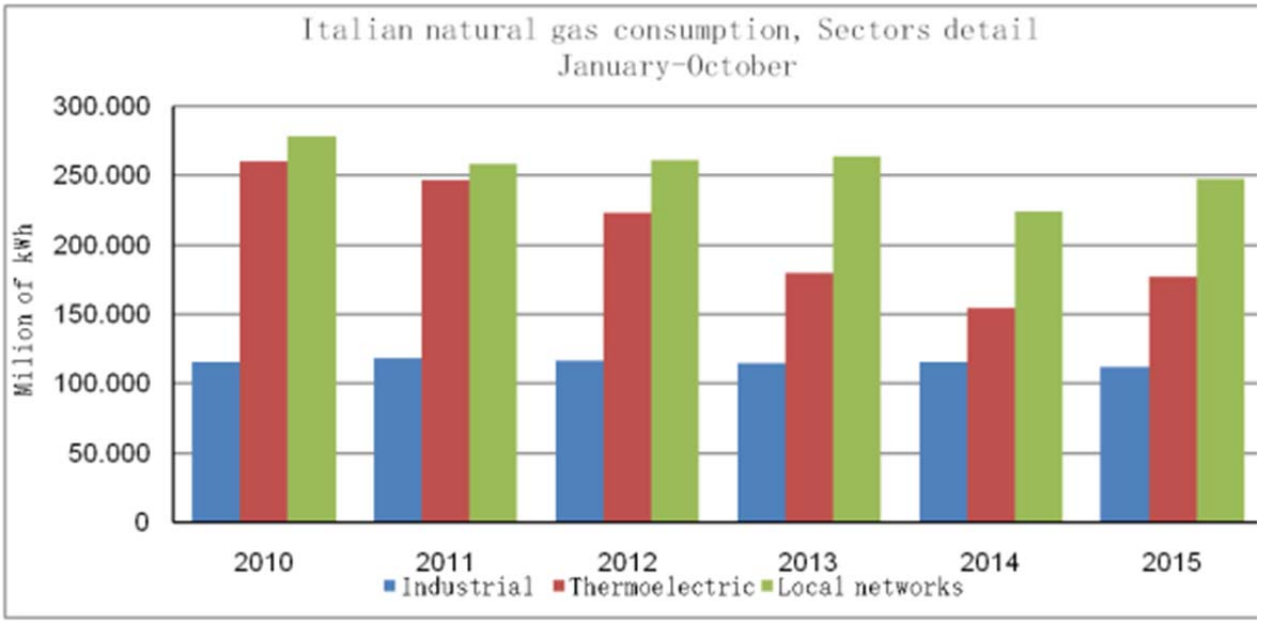
For instance, in July 2014, the report indicates that the stations of Roma Ciampino, Frosinone and Rimini registered temperatures lower than usual, while temperatures across Italy were around seasonal average. On the other hand, July 2015 witnessed extremely high temperatures, with regions in the north and the south being 4°C warmer than usual.

At this point, it is worth noticing that weather is an important driver of gas consumption for two reasons. First, higher temperatures in summer translate into higher electricity consumption, which then paves the way for higher gas consumption. Second, higher temperatures in summer can berelated to a decrease in wind and hydroelectric power production.

A proof of this. As reported by electricity transmission system operator Terna, wind power and hydroelectric power decreased both in July and August with respect to the same months in 2014. In July 2015, hydroelectric power production and wind power production decreased by 21.5% and 42.2% respectively. In August 2015, hydroelectric power production and wind power production decreased by 33.8% and 23.7% in comparison to the same month of the previous year. According to an emailed explanation from Terna, the decrease in production from these sources has essentially to do with meteorological conditions.

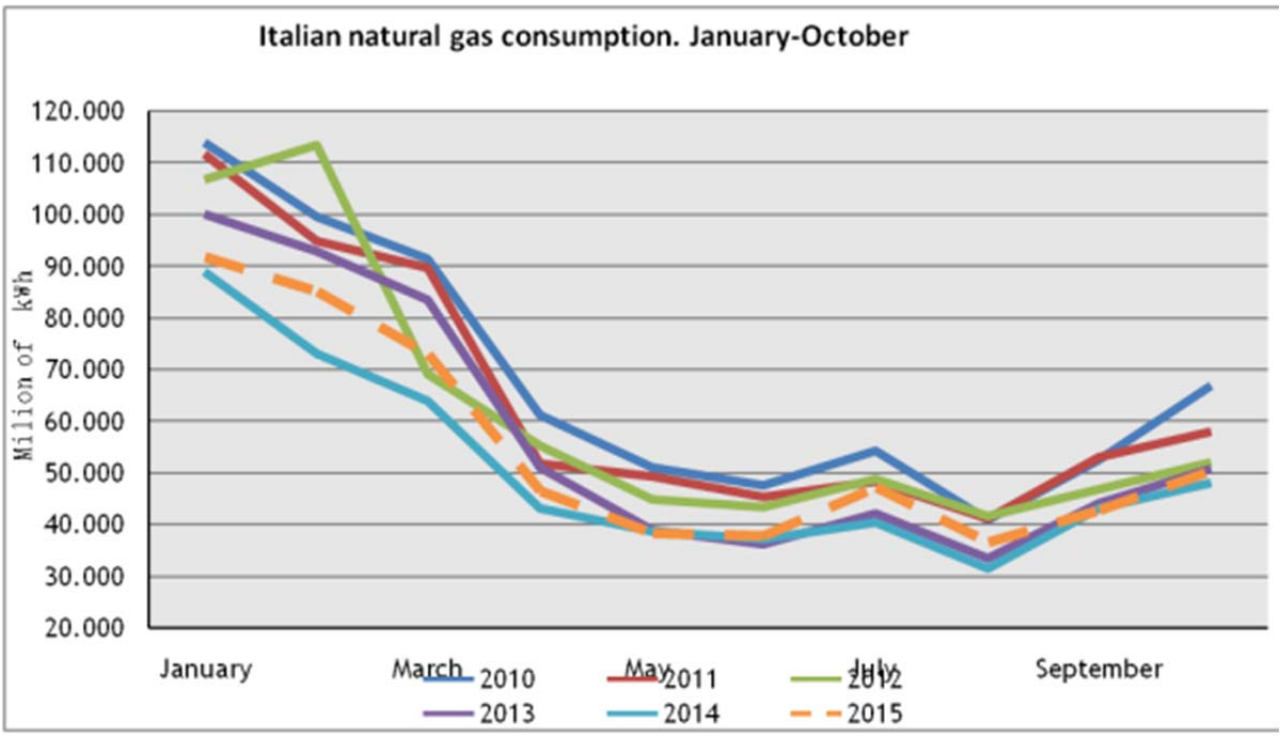
This evidence further supports the idea that gas is the flexible fuel, whose consumption in summer increases as a function of higher temperature, lower precipitation during the previous months and lower wind power over the day. In this sense, the CCGT (Combine Cycle Gas Turbine) power plants are the ultimate instrument to cover Italy's spikes in electricity usages, especially during warm and dry months.

A BIT OF BACKGROUND: NATURAL GAS CONSUMPTION IN ITALY



Graph 1
Source: Snam Rete Gas, Staffetta Quotidiana

As shown in *Graph 1*, 2015 bucked the trend. The current year is the first one since 2010 in which gas consumption registered a form of recovery. In general, natural gas consumption is on the wane.



Graph 2
Source: Snam Rete Gas, Staffetta Quotidiana

Indeed, also in August, Italy's natural gas consumption remained below consumption in the period 2010-2012. With respect to 2014, a slight increase occurred, but mainly in winter (January-March) and in summer (July-August).

The second graph proves that the natural gas consumption of the industrial sector does not change significantly, and that the thermoelectric and local networks show higher volatility. As claimed above in the comparison between July-October 2014 and July-October 2015, a possible explanation has to do with different weather patterns.

All in all, *Graph 2* reinforces the idea that variations in gas consumption have nothing to do with changes in industrial output.

CONCLUSIONS: FAST-EVOLVING WIDER PICTURE?

Gas prices are expected to further decrease in the coming months. According to Quarterly Report on European Gas Markets recently released by the European Commission, 'the continued weakness of oil prices means that oil-indexed gas prices are set to decrease further.'

Looking at the downward trend of gas prices over the last months, simple economic models would forecast Italian consumption to register an increase. Along these lines, one might expect an increase in gas consumption in the next months proportional to prices' decrease. Nevertheless, as the comparison between July-October 2015 and July-October 2014 shows, caution is needed. Gas consumption seems to fluctuate as a consequence of weather patterns more than anything else.

In conclusion, gas is meant to stay in the energy mix, but mainly as a backup. Unless drastic changes in European policies are made, variations in natural gas consumption will not go hand in hand with changes in economic activity, while the cleanest fossil fuel will simply dance its tango with weather conditions. In other words, the next report of Eurogas could be interpreted as a screenshot of temperatures across Europe.

[1] Data for October 2014 are temporary.