With Russia on the march again, Europe is naturally concerned with the low probability-high impact potential of a Russian inspired cut-off of its natural gas deliveries, particularly at this point in time with the crises in the Crimea and Ukraine which serves as Europe’s most pivotal and important gas transit country for Russian Federation gas. There are of course multitudes of other disruptive gas scenarios that could impact still sluggish European economies and hold them back from a more robust economic recovery.

On the other hand, European gas inspired fear on a collective basis may be a bit over-blown for a number of reasons. First, with natural gas markets becoming increasingly liquid due to the decrease in US natural gas imports, thanks to its own efforts in spawning a domestic shale gas revolution which in turn frees up LNG which can be redirected to other markets where it is needed, the global market for gas is changing. The winter in Europe was a mild one and gas supplies are robust due in part to slow growth, competition from coal, and the shuttering of gas fired power plants as a result. All of this however speaks only to one side of the supply equation and doesn’t address the role of Russian gas in European markets.

Transport is different

Gas transportation is a different matter. The fact is that the vast majority of natural gas is transported through pipelines rather than by LNG vessels. Over 50% of European gas imports alone come through Ukraine. Secondly, while there is pronounced dependence on Russian supply across the Baltics, Slovakia and (again) particularly Ukraine, overall EU dependency on Russian imports runs at about 30% which while high is still lower than what the prevailing public perception may suggest. Yet multiple scenarios remain, that if played out could, and will cause havoc in European gas markets if nothing more is done to improve Europe’s gas dilemma. This is precisely what researchers have been studying with an eye towards mitigating the downstream effects of supply disruptions through cost effective mechanisms particularly in the gas transport sector.

Overview of Europe's Natural Gas Network
Doing the Numbers on European Natural Gas Security

Written by Kevin Rosner
Tuesday, 08 April 2014 00:00

The author would like to thank Dr. Rui Carvalho for providing the necessary documentation for this contribution. The full version of Cavalho and Co.'s research is available by clicking here.

The exciting finding or observation of the research team's work is that if such cooperative, strategically mitigating efforts are agreed to now in gas distribution through fair-shared access to borders, comparatively minimized. This is a net positive given the troubling news along Europe's eastern border.

The team's most exciting hypothetical scenario they gamed a Russian gas supply cut off that partner territorially (shared borders) or through linked networks (pipelines) to imagine how this should work well, but some parties to the treaty, like the Russian Federation, never practiced the treaty's intent. Despite these disquieting numbers, the exercise is a useful one because it allows for countries to see for themselves the efficiency of cooperative behavior. The potential negative downstream effects of the next crisis for a gas-poor Europe should be much better off they would be in working together versus separately. Working together does not mean working through a centralized system which the sum of the parts are subject to a single point of failure but means a more decentralized system, using grid infrastructure as an algorithm that in some ways mimics how information flows through the internet in decentralized, fair-mechanism. In short, if European nations provided shared access to their own supply could be dampened, "by minimizing network congestion in a way that is fair to all parties involved," Carvalho is quoted as stating. While theoretically possible, this will require more national energy markets, at least in times of crisis, some of the pain associated with a cut-off in resource supply as the longer-term overarching goal. Of course not all of this can be achieved by reshuffling the same cards but with a multi-vector approach (further diversifying countries of example, that can service groups of states on a regional basis with a minimal level of gas re-routing gas from North (Norway) to South and from West (Netherlands) to East demonstrated this would work well, but some parties to the treaty, like the Russian Federation, never practiced the treaty's intent.

Overall natural gas makes up 24% of OECD-Europe's energy mix. That doesn't sound so bad on Russian natural gas deliveries while others, like the Netherlands or Norway, are far less susceptible to the whims and fancies of belligerent Russian politicians and policy makers. One size does not fit all European natural gas security can be enhanced through what one may call a pipeline network is not designed to handle this scenario. European gas dependency is a mixed bag with some nations like Slovakia, and the Baltic nations of Latvia, Lithuania and Estonia nearly exclusively dependent on Russian gas deliveries while others, like the Netherlands or Norway, are far less dependent.

Another observation is that in principle, if all nations adhere to the European Union, and market mechanisms, which puts a strain on prices when demand is high, we will only recover up to 5% of the Russian supply to Ukraine and up to 20% of the Austrian supply. Among other things, what this group has done was to develop an algorithm that in some ways mimics how information flows through the internet in decentralized, fair-dispositions. Potential supply disruptions. Among other things, what this group has done was to develop an algorithm that in some ways mimics how information flows through the internet in decentralized, fair-dispositions. Potential supply disruptions. Among other things, what this group has done was to develop an algorithm that in some ways mimics how information flows through the internet in decentralized, fair-dispositions. Potential supply disruptions. 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Source: Europa.eu