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**
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 against resupply from net European gas producers the Netherlands and Norway. The impact of that partner territorially (shared borders) or through linked networks (pipelines) to imagine how between 40% and 50% of the baseline throughput for the Czech Republic and Slovakia, we will re-routing gas from North (Norway) to South and from West (Netherlands) to East demonstrated example, that can service groups of states on a regional basis with a minimal level of gas single point of failure but means a more decentralized system, using grid infrastructure as an supply, supply routes, and flexibility in power generation through adding in renewables) 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 but then again this depends where one sits.

European natural gas security can be enhanced through what one may call a fairness-mechanism. In short, if European nations provided shared access to their own coupling restricted throughput capacity with higher transaction (transportation) associated costs competitive (and marginally smaller) transport price tacked onto every BTU of gas. The algorithm demonstrates that gas should flow through a path of least resistance and as bottlenecks begin to build and these metal arterial flows begin to clog the market will react thereby diverting supply through lower priced and unconstrained capacity corridors. Discussed 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

Doing the Numbers on European Natural Gas Security
Written by Kevin Rosner
Tuesday, 08 April 2014 00:00