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If the East is a career, as Disraeli wrote over 150 years ago, then today's Middle East is at least as much; deriving any kind of meaning from the convoluted interplay of the region's religions, nations, tribes, families, and movements is at best contingent and at worst endlessly frustrating. So, when Paul Sullivan is asked whether the United States will leave the Middle East now that the nation's oil supply seems more secure than it has been in a generation, the short answer is "no", and the longer reply is contained within the seven pages of tight analysis Dr. Sullivan has provided for this edition of *Geopolitics of Energy*.

Besides providing insight into the present situation in the Middle East, and the US' role in the area, Dr. Sullivan tackles some other larger questions that are at least tangentially related to the Middle East: alternatives to Russian gas, and the energy requirements of post-Fukushima Japan.

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George Eynon, member of the *Geopolitics of Energy* Editorial Board and formerly of the Alberta Energy Resources Conservation Board, is an expert on energy regulation and is frequently called upon to speak and write on topics in that field. The International Shale Gas & Oil Journal has kindly permitted GoE to reprint Mr. Eynon's latest commentary on regulation in the EU, a topic that has been on the tips of tongues recently as various European countries decide how (or if) resources such as Shale Gas should be developed.

Secular Stagnation and Inequality—ADDENDUM

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In this addendum to "Secular Stagnation and Inequality", which appeared in last month's *Geopolitics of Energy*, Karl Pinno addresses distinctions between rich countries and poor countries. Specifically, he explains the different social and economic trade-offs these nations must make in order to improve human welfare among their peoples.

US Shale and Some Grand Strategic Issues: Part I—The Middle East, the EU and Japan

Paul Sullivan

The United States, the Middle East, and... Will we Leave?

I am often asked the following question: if the US is going to be energy independent will it leave the Middle East given that it does not need any of the oil from the Middle East?

The US will not be energy independent by all projections from reasonable and credible sources. The US does not make its own LNG and oil tankers. It imports numerous technologies, parts, devices, and materials from other countries for its electricity and other energy systems. The US is likely to have plenty of foreign investments in its energy systems for some time to come. Energy independence is a fallacy that needs to be put to rest. The US may not even get to the point where it will drop the percentage of imports of oil from others below 15-20 percent.

If anything, *North America* has a very good chance to be oil independent to some degree if the US, Canada, and Mexico cooperate and collaborate on shale oil, oil shale, oil sands, and the like for many years to come, and if the required pipeline systems are developed for such regional oil security. The US may become a net exporter of natural gas in a big way, but it may continue to import Canadian gas into areas of the US that will need it and where the infrastructure to move that gas from US fields to US needs is not as economically and technically feasible as sending the needed gas from Canadian fields. It is best that Canada and the US continue gas trade, if even to a small degree, especially considering how weather shocks can change demands for gas in sometimes unpredictable ways. Canadian oil is vital to the oil security of the United States, and will likely continue to be for the foreseeable future.

The US will be importing oil from Saudi Arabia for some time to come, given a special deal that was made to have the Saudis build the Motiva refinery in Texas. In return, amongst other things, the US will continue to import about one million barrels a day from Saudi Arabia. We will likely continue to import oil from the Arabian Gulf for some time, but less so than in the past. The US likely will not be importing much oil or gas from Algeria or Libya. Egypt has a long way to go before it becomes an oil and gas exporter again. It is highly unlikely we will be importing oil from Iran for many years. Iraq may be heading into a very difficult period with the growing violent insurgency in the north possibly spreading to the south, and other internal issues, including the KRG-Baghdad rifts on oil and gas export policies. Imports of Nigerian oil into the US have declined to a trickle. It is light, sweet crude that competes with shale oil, and we have an accelerating amount of shale oil. We will require heavy Venezuelan oil for the medium term given that many of our refineries are set up for such oil. However, there has been a move away from this source due to the inherent potential political risks of instability and other reasons. The US re-exports back to the originating countries a great amount of its Venezuelan and Mexican oil originally imported as refined products.

Then there is the issue of virtual oil. This is similar to the concept of virtual water. When one imports an apple from New Zealand one also imports the water from New Zealand in the apple and in many ways virtually imports the water that went into making the apple. The importing country does not use its own water to make that apple – New Zealand does. When looking at this in energy terms we can see that Asia and the EU depend highly on oil from the Middle East and North Africa. China is now Saudi Arabia's biggest oil customer. India, China, Japan, South Korea, and Taiwan receive between 75 and 85 percent of their oil from North Africa and the Middle East, and most of that is from countries that are inside the Strait of Hormuz, such as Saudi Arabia, the UAE, Kuwait, and Qatar. The EU relies a lot more on Arab and Iranian oil than the US does. The largest trading and investment partnerships of the US are found in Asia and the EU. By far the largest stock of outward Foreign Direct Investment of the US is in the EU. The

largest growth in US exports has been to Asia and most particularly to China over the last 10 years or so. Such trade and investments use significant quantities of oil and gas from the region.

The US, even if it were not to import a single drop of oil or single molecule of natural gas from the Middle East and North Africa, would still benefit from being there to protect sea lanes of communications for trade. These sea lanes are important for US investments in the region, but also in Asia, Europe, and globally. The Middle East and North Africa have some of the most important trade and shipping choke points in the world, such as the Strait of Hormuz, the Suez Canal, and the Bab al Mandab off Yemen, the Strait of Aden, the Strait of Gibraltar, and more. Important fiber optic cables can also be found off the coasts and in the channels of this important region.

The US has stationed its 5th Fleet in Bahrain. It operates the massive Al Udeid Air Base, which is jointly run by Qatar. The US has other military interests in the region. It seems far-fetched to think that the US will pack up and leave the region due to its greater energy security in oil and natural gas from its own and its neighbors' fields.

The US has forged a strong alliance, and a protective one, with Israel. That is not going away. The region around Israel is becoming more complex and dangerous by the day. There is also the issue of counterterrorism. The US has a significant interest in this.

Syria is a petri dish for many new violent extremist groups. Iraq, especially near to the border of Syria and even onward to much of the north, is also a petri dish for terror groups and threats to many countries and people. The recent events in Fallujah, Mosul, and Al Anbar could be just the start of a much more dangerous and complex set of events. Groups could emerge that are even more dangerous than the Taliban. There is chaos, anger, and violence being sown in Libya, Yemen, the Sudans, Gaza, and more. The Arab Spring is far from over. Algeria could be next in line. From the GCC to Morocco there are significant US interests to be found that go well beyond the realm of energy.

There seems to be a developing cauldron of instability from northern Syria through northern and western Iraq, and possibly further into other countries. ISIS and other extremist groups claim to be developing a "caliphate" in the region. The region they are looking at is a vital one for present and potential future oil and even gas trade.

Iran is a potential wild card in all of this. If recent negotiations end up with a deal to reduce sanctions, that could lead to one set of scenarios. If the negotiations collapse and Iran initiates more threatening behavior, another set of scenarios could arise. Iran is very much involved in Syria, Lebanon, Bahrain, Yemen, Gaza, the East Province of Saudi Arabia, Kuwait, and to some degree even in the UAE. Iran is also connected with Central Asia and the Caucasus in multifaceted ways that could become more strategically compelling to the US in the future.

Then there are the issues that revolve around drugs and thugs. South American drugs go via Guinea Bissau and other areas in West Africa across the Central Sahara via Mali, Niger, etc., and then on to Libya for export to Europe and beyond. The connections between organized crime – drugs, people smuggling, etc. – and terrorism become clearer by the day. The Europeans are more affected by this, by the migrants trying to reach their shores for economic and other reasons, but the US has interests in these issues well beyond the simply academic and economic.

Can US Shale Gas and Shale Oil Help Europe (and others) Move from Russia?

Russia holds strong leverage over natural gas and oil markets in Europe. It is less strong than it used to be given the increased imports of LNG, for example, from Qatar and West Africa, and oil from West Africa and other newer sources. Europe also has considerable shale gas and shale oil resources that it could exploit. France, to date, has decided not to develop these resources. Germany seems to be heading in the direction of developing its own resources further. Poland will likely go ahead faster than others. Romania and Bulgaria hold substantial resources. The United Kingdom has been changing incentives for the advancement of shale oil and oil shale in order to cultivate further its considerable shale resources. Spain also has sizeable shale resources. The Netherlands and even Sweden may have noteworthy volumes of shale gas. On the other hand, Russia not only has large reserves of conventional oil and gas, but also some of the largest reserves in the world of shale oil in the Bazhenov shale basins. However, if the European states could develop their shale oil and gas, this could build over time greater energy security and greater energy self-reliance. As it stands now, if the trends of the past continue into the future, the EU and other European states near to it (i.e., the net energy importers, not places like Norway) could find themselves in very difficult straits while relying more and more on oil and gas from Russia, North Africa, West Africa, and the Arabian Gulf region.

The energy self-sufficiency ratio for Italy is about 17 percent, for Germany it is about 38 percent (but without nuclear it is just 30 percent), France is 51 percent (but under 10 percent without nuclear), and the UK's energy self-sufficiency ratio has been dropping as its conventional oil and gas fields have been in decline. The EU has a 90 percent import dependency on oil including intra-EU trade and a 70 percent import dependency on sources from outside of the EU. About 33 percent of that imported oil comes from Russia. Norway sends about 11 percent. Saudi Arabia, Kazakhstan, and Libya (mostly to Italy) are the next sources. Natural gas production in the EU has been in steep decline in recent years.

Overall, Europe holds a 60 plus percent import dependency on natural gas. Europe's energy security situation is far worse than that of the US. Russia supplies the largest chunk of that imported natural gas, at about 32 percent. Norway supplies about 32 percent, Algeria about 14 percent and Qatar about 8-11 percent, depending on the data sources. About 15 percent or so of this imported gas arrives as LNG. There is considerable LNG excess regasification capacity within Europe, which may allow further imports from Qatar and others with sufficient liquefaction capacity. The rest is piped in mostly from Russia and Norway, with some from Algeria, Libya, and a few others.

It is possible to change the directions of the flows of some gas coming into ports as LNG or even piped in from outside, or even inside, of the EU, to help enhance Europe's gas security in times of stress. However, some countries are completely reliant – or close to completely reliant – on Russian gas for their imports – and for some even their entire gas supplies.

The price per MMBTU for US gas has been in the \$4 range for some time. The price for imported LNG in Spain has been about \$13-15 per MMBTU. For the UK it has been about \$10-12 per MMBTU (sometimes as low as \$8), and many places in Europe have piped in gas prices and LNG prices that range from \$8-12 per MMBTU. US gas exporters could make considerable profits in some places if these prices are maintained or rise further. There are, of course, liquefaction costs, transport costs, and regasification costs that may all add up to about \$5 or thereabouts per MMBTU.

Whether to export to one place or another is a business decision in the US, not a government decision – unless there are times of extreme stress or if some treaty obligations kick in. The prices per MMBTU for LNG in Japan have been in the \$15-18 range. Prices in South Korea and Taiwan have been close to that, if a little bit lower. Prices at the regasification ports in China and India have been around \$13-15 per MMBTU. There are more profits to be made sending that LNG to Asia. Also, many Japanese and other Asian companies have been investing in US

LNG export facilities to try to lock in their share of the exports. Prices in Latin America are also often higher than European prices. That could be another competing market for US LNG exports.

US LNG exports will not happen overnight, as some politicians in Washington seem to think. It takes a long time to refit an LNG import facility to an LNG export facility. It can take even longer to build from scratch an LNG export facility. Then there are the FERC and DOE permits that need to be agreed to. The EPA also gets involved, as do many other federal, state, and even local organizations. Building and other permits are required to be completed, too. There is also a lot of local public buy-in to develop. Then there are the lawyers and the NGOs that still could toss a wrench into US LNG exports. It may be that the first exports of LNG from the US to any country from the new and refitted facilities will be in the 2017-2018 time frame. This is not exactly the sort of timing people are asking for in the EU and Washington.

For FTA countries things will be easier. They can import the gas. For non-FTA countries that gets a bit more complex. The development and passage of the TTIP trade treaty, if it has the right natural gas export provisions, could get these exports moving faster. However, one could also say the same thing about the TPP treaty that could connect many other countries, including Japan, to US trade networks in the equivalent of an FTA status – if the right wording is in the documents.

A country not much discussed but linked with the Ukraine crisis via natural gas is Turkey. If one looks at the maps of its major gas pipelines coming out of Russia, both go via Ukraine. As this situation has been playing out, the Turks have become nervous. Turkey is a NATO member; it is also a member of the IEA. This combination of memberships can compound the complexity of any significant energy threat emanating out of a Ukraine-Russia conflict. Many European countries are members of the IAE and NATO. This may become an important issue as the energy and security situation unfolds in Ukraine and other parts of Eastern Europe.

US shale gas needs to find a market. It will go to the highest bidders and to those who give the best combinations of deals to the LNG exporting companies and others. US shale oil, and later oil shale, production will continue to grow for some time. So far the US can export oil to Canada and only to some others with special provisions. US shale oil is often light and sweet. It is not the best oil for US refineries. (It would be great for many EU refineries. Chinese refineries are often set up for the heavier and sourer varieties. Japan could use some US shale oil as could many other Asian countries.) Because of the restrictions on the export of US oil, the following economic and technical absurdity is happening: light, sweet shale oil is being mixed in with heavy, sour crude (included that imported from Venezuela) to export refined products. There is no restriction on the export of most refined products.

The US could export shale oil after a much shorter time period than it could take to export shale gas as LNG. (Oddly, we can export gas in pipelines to Canada and Mexico with no real issues.) All this would take is a change in laws that have been in effect since the early 1970s when the oil shocks out of the Middle East started.

US energy law is based on an old mindset that still believes we are in a state of oil shortage. That is no longer the case. With the development of the XL pipeline and other connections with Canadian and Mexican oil fields, there are huge opportunities for all three countries to develop massive markets for their oil and gas, and not just in the region. If Mexico can change its laws with regard to its oil industry why cannot the US? Changing the laws in the right way is good business. It is good for the economy. It can help the country reduce its debts. It could get a lot of people to work. It could help develop much better energy, economic and diplomatic relations with our neighbors and many other countries in the world.

Can we help develop stronger relations with our NATO, EU, other European and IEA allies by developing further our exports of shale oil and shale gas? Of course we can. In many ways this is a

no-brainer. Russia seems to be on the move to regain some of the power, leverage and territory it lost during and since the fall of the Soviet Union. It can strangle much of Europe by cutting off oil and gas supplies to them. Will the Russians do this on a large scale? This is highly unlikely given that Europe is their biggest energy market for not only oil and gas, but also coal, enriched uranium, and more. The Russians are tough business people. They can also be very strategically tough.

They are certainly not stupid. They realize their economy is imbalanced toward energy and other minerals exports and that their industrial capacity is not where it could be. Some of Russia's biggest industrial exports are arms and ammunition. If their markets for oil and gas were to be cut off, their economy would crash, but the economies of Europe would also crash. Given the importance of Europe, and especially the EU, in the world economy, much of the rest of the world economy would also be harmed. China's largest trading partner is the EU. Much of Asia relies on the EU. The US has massive investments and trading networks in the EU. So let's forget that option. Nobody wants that.

It looks like Russia is having its own Asia Pivot with recent energy and other deals with China, Japan and others. Gazprom has been moving into Asia for investments and market development. This makes sense. Many Asian states are growing at 5-7 percent. The EU is barely growing. Asia will be the source of most of the growth in oil and gas demand for some time to come. It is good business for Russia to start a refocus towards Asia, and it is also smart diplomacy and economics to diversify its energy customers. Many of these newer Asian markets for Russia do not have the political and historical baggage carried by the Europeans.

Many Asian states may just go along with Russia in the UN or in its efforts against sanctions because of their increasing reliance on Russia for energy resources. Energy and Gazprom are a big part of the foreign policy of Russia. Money is a big part of it too, but there is far more involved, including the Russian views that they need to rebuild the respect that they perceive as deserved in the rest of the world. Russia is also reaching out and moving into the Middle East, North Africa and more. It is becoming more involved in Africa and Latin America. It is getting more active in the Arabia Gulf. It is a supporter of the current regimes in Syria and Iran. Russia wants to be back at the big table with the big players, and it is using energy, in part, to get there.

Given the increasing breadth of Russian intrigues and efforts, the US and others should also begin to see how they could strengthen their positions compared to Russia in Asia, Latin America, the Middle East and North Africa, and more. This may be the time to develop a new containment policy. This containment policy could have as one of its most important elements energy exports from the US and energy aid to countries that seem to be falling further under the sway of Russia and its proxies. Grand strategies involve many instruments of power and many ways of using those instruments of power.

Can US Shale Gas and Oil Help Japan (and Also Reduce Tensions in the East China Sea and South China Sea)?

Japan is going through a very rough patch. Fukushima shattered the nation's energy system. All of Japan's nuclear plants are shut down with a loss of more than 40 GWs in electrical capacity. This loss has been counterbalanced with increased imports of LNG, coal and, to a lesser extent, oil. Japan has entered into trade deficits for the first time since 1980. Most of these deficits are due to the increasing costs of LNG and oil imports, and mostly from LNG imports. US exports of LNG will not happen anytime soon, as stated above, and may take until 2017-2018 to get going. Japan used to import a lot of LNG from Alaska, but these imports ceased pretty much in 2011. They could be restarted with the right developments of various gas fields and the associated LNG infrastructure. US LNG exports from ports on the Gulf of Mexico to Japan also look to be developing. Many previous regasification trains are being considered as possible LNG export, liquefaction trains. Freeport, Sabine, and Cameron LNG import facilities could be refitted and developed into export terminals, especially for the Texas and other southern shale gas reserves. Neptune, Everett, and Cove Point might also be developed along those lines if all of

the approvals, investments and so forth go as hoped for by the companies involved in these massive investments. Some of these companies are big trading companies in Japan, such as Mitsubishi and Mitsui. Some Japanese companies are investing in the shale gas fields. The Japanese embassy and others have been lobbying vigorously for US LNG shale gas exports.

LNG shale gas exports are only part of the solution to the high costs of fuels for Japan. Natural gas fields and LNG export facilities are being developed in Australia, Canada, Papua New Guinea, Russia, and many other locations in the Asia-Pacific region. Then there are the massive natural gas fields found in East Africa. Nigerian LNG, Qatari LNG, and other sources are also there for Japan.

Japan is the world's largest LNG importer. It takes up about 37 percent of the global trade in LNG. Its needs are growing even as it is shifting more and more to coal, given the weaker pricing of coal in international markets. Japan's sources of LNG are diverse and also come from some countries that will be developing further LNG capacity, such as Australia, where there are no limits on the export of LNG. Japan imports about 10 percent of its gas from Russia – mostly LNG from Sakhalin. Russia is building more LNG capacity in Vladivostok that could be directed at Japan. Japan could be another area where the US could help contain Russia with the energy instrument, but this could prove to be a lot harder, less effective, and even less likely than this instrument being used in the EU.

Japan's energy self-sufficiency without its nuclear plants is about 4 percent, which is the lowest of any OECD country. The Japanese are worried about their energy future, and they see US LNG as part of a solution. Indeed, the US could take some of the pressure off of Japan's LNG needs, but it will be at a high price for the medium-term given that so far the prices in Japan's markets are not generally gas-on-gas. If Asia-Pacific markets start to tend toward delinking from oil-based contracts, which is also an issue in Europe, and if global LNG infrastructure and shipping capacity increase considerably, then these prices may go down.

US LNG could be a part of this developing global LNG market. However, there will be many competitors supplying LNG in the future in the Asia-Pacific region and globally. If LNG markets link up with pipeline markets globally over time in pricing and delivery concepts and if there is a strong spot market developed, then there could be a global market for natural gas, much like there is a global market in oil. The prices of LNG would tend to go down as long as there are excess profits to be made by moving the LNG from where it is being produced to where it is needed, net of costs that also include liquefaction, transport, regasification, etc.

However, as regional and global gas markets become less segmented and more uniform in price net of transport in particular, and as prices drop, the higher-cost producers and shippers could find themselves in difficult times. LNG facilities are extremely expensive and profits need to be flowing in for the LNG to be flowing out.

There are some wild cards in the pricing of LNG in the future. Some of these include how much of the world's massive shale gas reserves are developed, how the LNG and pipeline markets are developed to take care of these increased supplies, and hundreds of other variables that can help determine supply. Then there are the demand side variables. Will transport shift from mostly oil to a lot more use, or even a majority use, of natural gas? Will many other industries change over to natural gas from oil and coal due to regulatory, tax, environmental, and price reasons? These and other very important potential game changers could make LNG markets for Japan and others, well, interesting to try to judge over the lifetime of an LNG facility, which is in the decades.

LNG and pipeline markets will be part of a 4-dimensional chess game being played by the major exporters and importers at first, and then by many others as they develop their supply and demand patterns for the longer runs. One thing is for sure: there will be a lot more natural gas

out there, both LNG and pipelined, and likely for a long time to come. This could relieve the pressure on Japan. It could also put some pressure on countries like Russia to renegotiate terms and even pipeline and LNG ideas.

Something that could have a far larger impact on the tensions in the South China Sea and the East China Sea than US LNG exports (or even US shale oil exports) is the development of shale gas reserves in China. China has massive shale gas reserves – the largest known to be held by a country so far. If it develops its shale fields, then the need for gas from under the seas is reduced. Its need for oil could also be reduced via fuel substitution in China.

Nevertheless, the tensions between China and Japan go well beyond resource stress in oil and gas. There are many historical, strategic, and “face” issues involved that transcend MMBTUs and barrels of oil.

Another looming game changer for Japan is methane hydrates. Japan has only tiny conventional and shale gas reserves in place. It has potentially massive methane hydrate reserves offshore. If Japan can figure out a way to develop these fields and get the gas to its electricity generating stations and other users of gas, then we are in a very different game. If the world follows on with its development of methane hydrates then all of this talk about shale gas reserves becomes less strident globally, and less strategic regionally and globally, and may even be somewhat overwhelmed with the promise of methane hydrates. Methane hydrate reserves are many thousands of times more than those of all of the shale and conventional gas reserves combined.

In the short run, Japan has few options other than what it is doing. In the longer run, many things become possible and its options grow. However, there is considerable uncertainty in all of these options given the complexities of regional and global energy markets, economies, politics, diplomacy, and more. Then there are the potential disruptive technologies that will land again and again into energy and other markets.

It will surely be a very interesting time to be in the natural gas industry, in the US, in the EU, and in so many other parts of the world where this 4D Chess game of natural gas and its associated industries will be played.

About the Author

Paul Sullivan is Professor of Economics at the National Defense University; Adjunct Professor of Security Studies at Georgetown University; and Adjunct Senior Fellow, Federation of American Scientists in Washington, DC. He is a Columnist for UB Post, Ulaanbaator, Mongolia and Turkiye Gazetesi, Istanbul, Turkey as well as Global Expert, UNAOC.

Professor Sullivan's opinions are his alone.

Canada's Regulatory Experience and Operational Best Practices: Concepts Applicable to EU Member States

George Eynon, PGeo FGC

The International Shale Gas & Oil Journal (ISG&OJ) is a quarterly journal on political, economic, regulatory, tax, and legal areas of shale gas and oil developments in Europe for practitioners and academics in the field. The journal draws on experiences in USA, Canada and China—but the focus is on Europe. ISG&OJ updates EU and national level legislation, outcomes of research on shale gas and oil potential by geological national surveys, reviews on developments, and perspectives in EU countries. ISG&OJ articles focus on the political state of play; business developments and new market entrants; concessions trading in the EU; the conclusions of expert reports from think tank; international and national organizations; and opinions expressed by EU and governments officials, lawyers, scientists, IOC's and NOC's, and regulators.

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Background

It is probable there would be no problems or issues with the public and the media around shale gas and tight oil development anywhere if two conditions were to be satisfied: first, each jurisdiction has a strong, arms-length regulatory framework in place, and second, oil and gas companies realize they must earn and maintain a social license to operate and conduct themselves accordingly. Similarly, any regulator should have two fundamental characteristics: a clear mandate from its government and policy makers to create the necessary regulations to manage development of the oil and gas resources in the public interest; and the teeth to enforce compliance with those regulations. The Canadian experience tells us it is as simple as that; the following provides some observations and suggestions that might be applicable and helpful to EU Member States. Unconventional resources have been developed in western Canada for several decades, beginning with Deep Basin tight gas in the 1970s, and then coalbed methane, shale gas, and tight oil since the early 2000s.

The beginnings of Canadian regulation - Canada's federal government transferred the Mineral Rights to the provincial governments of the western Provinces in 1930. Western Canada's conventional oil and gas resources have been produced for much longer, though. The Canadian Pacific Railway discovered natural gas near Medicine Hat in 1890; in 1904 the town became the first in western Canada to have its own gas utility. The discovery of oil at Turner Valley south of Calgary in 1914 changed the economic fortunes of Alberta—and its landscape—forever. In the 1930s the Turner Valley field was producing about 25,000 barrels of oil per day and flaring huge volumes of natural gas; enough to light up the night sky and be seen from Calgary almost 50 km away. This prompted the creation of the Petroleum and Natural Gas Conservation Board in 1938, to focus on conserving Alberta's energy resources and ensure their orderly development. Today the agency is known as the Alberta Energy Regulator (AER).

Resource ownership - As in Europe, ownership of subsurface rights is reserved almost exclusively to the state—the *crown*, as it is referred to in Canada. Oil and gas and minerals were initially under federal jurisdiction; they were transferred to the provinces in 1930. Development of the vast, open *prairies* of western Canada—akin to the *steppes* of Ukraine, Russia and large areas of Eurasia—began more than one hundred years earlier, occurring in several waves. By far the largest wave happened in 1897-1929 with immigrants from many European countries descending on the prairies. These *homesteaders* were granted *freehold* lands to farm, with both surface and subsurface rights. As a result, a relatively small percentage of petroleum and natural gas (P&NG) rights are still today not held by the crown in the provinces of Alberta, Saskatchewan, and British Columbia (BC). Freehold lands comprise about 22% of lands in Saskatchewan, 19% in Alberta and only 5% in the more remote northeast BC. Canada is therefore a good analogy for EU Member

States to consider; most US jurisdictions, by contrast, have a much greater proportion of the lands under freehold, with highly fragmented partial ownership interests over ensuing generations.

Density of settlement - However, given the size of the prairies and the much shorter history of settlement, the population density differs considerably from that of EU Member States. Alberta's population is slightly more than 4,000,000 spread over an area of 661,848 km²—a population density of 6 per km². Poland, by contrast, has a population density of 124 per km²; with a total population about ten times Alberta's in an area only 47% of its size. Accordingly, direct comparisons are difficult—but the principles that guided the oil and gas development in western Canada are applicable.

Agriculture and oil & gas: both part of the landscape - Given that the agricultural settlement of the western provinces of Alberta and the development of the oil and gas industry occurred rapidly one after the other almost 100 years ago, it is no surprise that the two sectors have developed an almost symbiotic relationship. While this is obviously not the case in EU Member States, the lessons learned over the past 100 years should prove useful. The relationship between agriculture and oil and gas has changed continuously over that time, and continues to evolve today as new technologies impact the ways that both the oil and gas sector and the regulator operate.

Regulation as a Profession

Controlling risks, or harms, is a central challenge for government regulators charged with the task of reducing societal ills and preventing bad things from happening. Regulatory management—designing and building proactive systems to mitigate the risks companies face—is at the core of the author's consulting practice. During my time as an Energy Resources Conservation Board (ERCB; the long-established predecessor to the AER) Member the regulator sought the best advice, theory and practices. We recognised that regulation, in and of itself, is a valid profession, as espoused by Prof. Malcolm K. Sparrow, of Harvard University's Kennedy School of Government. He worked briefly with the staff at the ERCB. Sparrow has written two books^{1,2} that ought to strongly influence regulation and its practitioners. This author had earlier attended the Massachusetts Institute of Technology's Sloan School of Management, and had become familiar with the work of Peter Senge on *learning organizations*.³ These two sets of ideas of Senge and Sparrow are highly complementary, as other commentators have recognised. They are recommended reading for anyone managing regulatory issues whether in companies or regulatory agencies.

*Focusing on specific bad things
(risk-concentrations, trends, patterns, etc.)
offers you the opportunity to think and act like a saboteur;
to find a vulnerability of the harm itself, and remove it...⁴*

Small-scale targeted interventions - Sparrow makes it clear that we often need to shift the focus from promoting the general good to addressing specific harms. He notes that an explicit focus on the bad things that can occur—harms such as leaks and spills from oil and gas operations—rather than the traditional end-conditions (safety, public interest, environmental stewardship, etc.) provides for *surgically efficient and effective interventions*. It is a matter of being able to spot emerging problems quickly and suppress them before they do much harm; of being nimble, and unfettered by bureaucratic function and processes. This can be accomplished if the regulator is set up under the principles of a sound regulatory system described below.

Potentially catastrophic risks - There is a range of properties of some risks that frustrate the regulators responsible for mitigating them. Catastrophic risks often present a low frequency or probability (some may never have happened), but extreme consequences should they happen. There are not always enough events or data to help in developing mitigation practices. Regulators therefore need to examine precursors, near-misses, and reportable events that are not actual incidents, but which provide a dataset for learning, feedback and regulatory improvement. In 1997 and 1982 two sour gas (H₂S) wells blew out of control in a remote area of the province near Lodgepole, Alberta. These provided the impetus for development of regulatory requirements for sour gas operations. As a result, *loss-of-control* drilling incidents that do not develop to the blow-out stage, and pipeline/facilities leaks and spills of whatever magnitude, are all required to be reported—they are all near misses, if you will. Dealing with catastrophic risks demands systematic examination of these near misses and precursor events, seemingly unrelated disasters that occur elsewhere, and the imagination to explore all the ways in which events or near-events might have been much worse.

Risk mitigation and land-use planning - Such catastrophic risks can be quantified and assessed in terms that aid regulatory development; particularly in the area of permitted types of activity and various types of land-use. Risk analysis experts in Canada, as elsewhere, use a modified Risk-based Land Use Planning Guideline⁵ from the Major Industrial Accident Council of Canada (MIACC) for tolerable individual risk levels that change with the land use. These criteria were developed for the risk of death occurring and therefore incorporate an extremely low chance of occurrence.

A recent Decision by the AER⁶ discussed the societal tolerability of risk levels:

“[218] Risk evaluation involves comparing estimated levels of risk to established risk criteria to determine the significance of the level and type of risk. Whether a risk is judged as small or large, or as tolerable or intolerable, depends on many factors. Risk tolerability criteria are set based on the premise that the risk being evaluated should not substantially increase the risks of everyday life. Risk tolerability criteria give decision-makers a frame of reference for making value decisions and have been adopted by many jurisdictions.”

This approach to regulation and risk-evaluation and mitigation is already well known to Europeans; it has been used extensively in the United Kingdom and the Netherlands, both of whose systems Alberta studied in great detail when developing its own approach.

Principles of a Sound Regulatory System

The primary focus of this article is the AER, being the largest regulator in Canada’s western provinces. The AER is in place to ensure that Alberta’s resource policy development, public consultations, and regulation of energy development are efficient and competitive; and support public safety, environmental management, resource conservation, and the rights of landowners. The AER oversees all aspects of energy resource activities in accordance with government policies.

Energy regulation in Alberta spans more than 75 years and has evolved over time. This evolution continued in 2013 when the AER... began taking on regulatory functions related to energy development that were previously held by Alberta Environment and Sustainable Resource Development. The AER is now the single regulator of energy development in Alberta—from application and exploration, to construction and development, to abandonment, reclamation, and remediation.⁷

Clear and long-standing mandate - While the regulatory agency has had different names and somewhat different functions over that time, the AER—successor to the long-established Energy Resources Conservation Board or ERCB—now has jurisdiction over all aspects of the oil and gas upstream sector from “cradle-to-grave”. In 1938 the province of Alberta created the original precursor to today’s AER. For over 75 years, several principles have guided the approach to developing and maintaining a relevant and effective regulatory regime. In particular, Alberta’s

regulatory agency has had a responsibility to ensure that: resources were developed in a manner that prevented waste and optimized resource production; the public was protected; impacts to the environment were minimized; and development occurred in an orderly fashion. That is, to ensure that the discovery, development and delivery of Alberta's energy resources takes place in a manner that is fair, responsible and in the public interest.

Legislated authority as an arm's-length agency - As a delivery regulator, the AER has legislated authority—as per the Responsible Energy Development Act (REDA) enacted June 2013 (and delegated from various other Acts of the Alberta provincial legislature)—to develop processes and rules, and make decisions, so that the goals of the government's policies are met. In that context, policy setting—the high-level directions about what outcomes are or are not acceptable to Albertans—is properly the purview of the elected politicians and the government departments. Translation of those policies into specific regulations and their implementation is the domain of the regulatory and technical experts at the AER.

Separation of responsibilities under REDA - The Alberta government—as a matter of *best practice*—ostensibly believes in maintaining an arm's-length relationship when it comes to regulation of the operational activities of the industry players. To avoid real or perceived conflict of interest, the regulatory functions are separate from the provincial government's roles in the allocation and promotion of resource development. The government therefore reserves to itself the granting of Crown mineral leases, collection of royalties, and government promotion of resource development opportunities within Alberta, which are conducted by Alberta Energy. The REDA created a structure for the AER that involves a governance Board and a Hearing Commission that are separate from the day-to-day running of the AER activities. The intent is to provide the benefits of both strong corporate oversight and independent adjudication. The governance and operational responsibilities are separate from adjudicative function (i.e., *hearings* on disputed energy development applications). While the Board is not involved in the AER's day-to-day operations and decisions, it is charged with approving regulatory change; however, policy direction is provided in theory by the Policy Management Office (PMO) of the government.

BC and Saskatchewan regulatory agencies - The province of British Columbia created an agency akin to the AER—the British Columbia Oil & Gas Commission (BCOGC)—which has a similar Board, consisting of three directors, with the Deputy Minister as a Director and the Chair of the Board and the others appointed by the government. In this case, separation of responsibilities is less apparent. In Saskatchewan separation is even less obvious; the regulatory function resides with a government department—Saskatchewan Energy and Resources, headed up by an Assistant Deputy Minister—inside the Ministry of Economy.

Technical competency - A high level of technical capability in the regulatory body is fundamental to a successful regulatory system. It is the very foundation of a high quality quasi-judicial adjudicative and decision-making process, and a fundamental characteristic of a regulatory body that provides credibility with all stakeholders. Technical competency in the regulator must be available in all areas of the regulatory system. Those functions include identifying hazards, assessing the potential harms such hazards might create, assessing and prioritizing the risks of them occurring, developing mitigative options, choosing the correct option, and developing and ensuring quality compliance processes.

Focus on controlling risks and solving problems - To ensure that the right regulatory solutions are in place, and the industry is not over- or under-regulated, the regulator needs to take a risk-based approach to clearly understand specific challenges associated with upstream oil and gas activity; and then choose the appropriate regulatory tools to solve those problems. Its risk management framework should ensure an effective and efficient approach to identifying, assessing, and mitigating risk; and a consistent application of regulatory response proportional to the level of risk. A broad set of tools to deal with different kinds of risk include options from

prescriptive to performance-based regulation, and non-regulatory options such as industry *best practices*, incentives, education and awareness.

Compliance with requirements: surveillance, enforcement and reporting - There must be assurance that regulatory requirements are adhered to if the system is to be effective; and compliance requirements must be clearly articulated for companies to understand their obligations. This requires an appropriate surveillance program of inspections, audits, and complaint response so the regulator can determine whether or not requirements are being adhered to. The AER has tools at its disposal to enforce in situations of non-compliance, commensurate with the perceived level of risk.

*Any regulator should have a clear mandate
from its government...
and the teeth to enforce compliance*

Fairness and transparency - Provincial governments, industry and public broadly accept that an effective regulator should be rigorously transparent, with open decision-making and publication of decisions with reasons, and have an effective decision appeal mechanism. In making decisions that may adversely affect parties, the AER—through its Hearing Commission, which is separate from the regulation-making, surveillance, compliance and enforcement functions—applies principles of natural justice. The principles of natural justice apply equally as an expectation of the industry, which must consult with parties (the local residents, local authorities, and other local entities) that might be affected by oil and gas development projects—and find ways to address their legitimate concerns. Effective stakeholder engagement is required by regulation for companies to obtain the right to develop new and existing operations. This is explicit in the AER Directives 056 and 071. It has also been explicit in AER Board decisions⁸ for almost a decade, and will be even more important in the development of unconventional resources in Alberta in the years to come as the AER develops its regulatory framework for those resources.

“In the public interest” - The members of staff and the Board of the ERCB had a mantra that each and every one could recite by heart: they conducted themselves *“in a manner that is fair, responsible... and in the public interest.”* Some of the Public Interest criteria—public health and safety, environmental protection—are obvious. Others are not so obvious to either the general public or to industry. First, resource conservation: getting the optimum recovery rate; not wasting resources during operations; and so on. Second, protection of the public purse: ensuring that wells, facilities and pipelines are not left orphaned at the end of the day; and that a viable licensee liability program is in place to do so. Third, orderly development: balancing the concerns of local residents with industry requirements; balancing facilities proliferation with demands for a competitive system; and other seemingly conflicting issues. It is curious that those few words—*in the public interest*—do not appear in the REDA; their omission is worrisome. Quite what their omission means is not clear, but it certainly leaves the public with some pause for thought as to the intent of government after such a clear mandate for the past 75 years prior to REDA. It must be hoped that the AER maintains the same overall intent.

Pre-existing regulatory requirements - The authority to regulate comes from various Acts, passed by the federal or provincial legislative bodies, which set out the general authorities and requirements that form the basis of the regulatory framework. At the next level, within Canada’s federal and provincial oil and gas regulators, there are what the AER terms *Directives* for all areas of the upstream sector. These have been developed over many decades and are kept up-to-date as required. They should be succinct, and state why the requirements are necessary, identify the risk they are intended to mitigate, and let the regulated companies know what actions are expected of them. The effectiveness of all Directives should be assessed on a regular basis to

maintain clarity and relevance and to remove requirements that become obsolete. Directives cover the broad spectrum of activities: applications for approval of activities; drilling and completions; production and operations; suspension and abandonment; infrastructure liability; data submission; notification and consultation of potentially affected parties; and compliance. All the basics are as applicable to unconventional resource development as they are to the conventional resources they were initially designed to regulate. The AER's complete set of Directives are available on its website.⁹

A New Time and a New Place

The phrase resonates with the regulator's staff and with the public for good reason: the oil and gas sector is the engine of Alberta's economy and, as already identified, a visible element on Alberta's landscape. There are about 200,000 producing oil and gas wells, 190,000 abandoned wells, more than 60,000 inactive wells, about 400,000 km of pipelines and 45,000 oil and gas facilities. Alberta produces 73% of Canada's energy needs from 34% of the country's conventional oil reserves, 100% of bitumen and synthetic crude oil resources, 64% of natural gas reserves, and 46% of its coal reserves. Despite all the benefits accruing to Albertans—and to all Canadians—from the oil and gas sector, there is always a degree of apprehension over oil and gas development. This apprehension derives from significant new developments in four areas; and changes almost always create apprehension in one or more segments of society.

Societal changes - We have seen significant changes in the past decade in the demographics and social geography of Alberta in particular. There is now a considerable urban encroachment into rural areas, with "city folk" moving to live on their idyllic quasi-rural acreages and new *urbs in rure* residential developments. The oil and gas industry is intensifying activity in existing rural areas, as well as operating closer to existing and expanding urban areas. Significant urban development is occurring in areas that were hitherto "oil and gas country." All these demographic changes create considerable social unrest for the pre-existing populations and the "migrants" alike. These are the same sort of problems that much more densely populated EU Member States have to contend with, only more intensively.

New resource types and technologies - The so-called *shale gas revolution* is predicated on rapid changes in the hydrocarbon resource base and relatively new development technologies. Unconventional oil and gas—shale gas, tight oil, shale oil, coalbed methane, and *in situ* recoverable oilsands—are spatially more extensive resource opportunities, quite different from the discrete pools/fields associated with conventional oil and gas. They are developed with multiple wells on single pads that amount to light industrial sites, rather than the individual well-sites of conventional oil and gas development. Major technological advances have occurred in two areas: horizontal drilling capabilities, and multi-stage hydraulic fracturing of the reservoir rocks. Both of these basic technologies have been available for many years, but it is only over the past decade that significant advances made them spectacularly effective—together—in making tight oil and *in situ* bitumen recovery easier and in creating the North American shale gas revolution. They have opened up the whole world to the prospect of abundant, almost inexhaustible, energy supplies—and concomitant meaningful economic development.

Different types of oil and gas companies - Over the past decade or so there have been significant changes in the nature of the oil and gas business structures; many of the companies that operate today were created and are run by the financial investment sector. There remain, of course, a few "majors", and a number of large "independents" that are run by technically proficient managements. However, many of the smaller companies are pure stock market plays; financial constructs focussed mainly on profits, with hydrocarbons merely as the vehicle. They are by definition not around for the long-haul; their initial capital investment attraction is based on strong start-up plans, with relatively short-term (five-year) exit strategies.

This approach does not permit time to develop the "good neighbour" pre-requisite for successful, conflict-free rural operations. Companies allocate few if any resources—financial or

human—to proper stakeholder engagement in the form of real and meaningful involvement in the local community. However, there is a growing recognition of the need for excellence in community relations among some of the successful entities that passed the five-year exit mark and continue as legitimate oil and gas companies. Not that all the larger companies take the time to develop a good neighbour culture either; several notable ones eschew the business case for technical excellence and community relations in their pursuit of stock price increases. The operational performance of a relatively small number of companies creates reputational problems for the whole exploration and production sector. Fortunately for EU Member States, few if any of these companies are likely to want to develop unconventional resources in Europe, where the time-frame does not suit investors looking for short-term pay-back.

Stakeholder expectations - The spectrum of stakeholders in the upstream oil and gas sector is broad, and their expectations are ever-changing. The industry continues to lobby for a competitive environment—its profits. The need for a strong base to the economy is not lost on politicians and bureaucrats. Various elements of the general public have differing expectations. Local residents and communities want to be consulted on oil and gas plans for development in their immediate areas. Rural landowners—whether long-term over several generations or newly-arrived former city dwellers—want to preserve or create a quality of life. Local authorities (municipalities and counties) that derive property and *linear* tax revenues from the sector want to encourage development, but also have voters to heed. The Alberta provincial government derives the bulk of its revenues directly and indirectly from the oil and gas sector in the form of royalties (about CAD\$10 billion per year), P&NG lease bonuses (about CAD\$2.5 billion per year), and personal and corporate taxes. The residents of Alberta (and BC and Saskatchewan) recognize that higher revenues fund better services from their various levels of government—and in Alberta that also means no provincial sales tax.

Industry Response

The oil and gas sector in the western Canadian provinces, for the most part, has recognised the need for developing and maintaining what has come to be commonly termed *a social license to operate*—a need for a greater degree of corporate social responsibility, with stated positions and policies that create the appropriate culture in their organizations.

Synergy groups - These community-based multi-stakeholder groups that address the pressures of oil and gas development have been around since the 1990s (they were formalized under the banner of Synergy Alberta in 2006). From 2000 to 2005 they held *synergy conferences* to share ideas, and soon realized that the simple idea of stakeholders coming together in a respectful manner could make a real difference in ensuring community engagement. By 2010 there were 25 such groups spread throughout Alberta.

Synergy Alberta's mission is to foster and support mutually satisfactory outcomes in Alberta communities by providing information, mutual learning, communication, skill development, facilitation and resources.

Industry and professional associations - The oil and gas sector has long organized itself into industry and professional associations.¹⁰ These represent the oil and gas producers (CAPP, EPAC), service companies (PSAC), professions (CSPG, CSUR, CSEG, etc.). All, to varying degrees, provide the information, mutual learning, communication, skill development, facilitation and resources for the success of the synergy groups; they are readily available on their various websites. Perhaps the critical element of this information is the series of *Best Practices* that CAPP has developed for its members—the operating companies—for a broad spectrum of operating processes.

A Different Regulatory Approach for Unconventional Resources

As noted previously with respect to conventional oil and gas operations, the ERCB in its decision 2007 AERCB 061 has long-recognized the need for strong and appropriate community relations (see endnote⁸). These principles are the foundation of a proposed regulatory approach to managing unconventional resources.

An unconventional resources regulatory framework - In 2012 the ERCB finally released an expanded unconventional resources regulatory framework (URF) framework—Regulating Unconventional Oil and Gas in Alberta: A Discussion Paper¹¹—that had been in development for several years, but publication of which was delayed by the provincial government during its development of the REDA. Response to the approach has been generally positive, though there is some apprehension about the ability to engage industry completely.¹²

The existing regulatory approach for conventional resources is based on the approval of individual activities in individual pools, with little concern for cooperative development. There have been exceptions regarding non-proliferation of facilities, and for various oilsands in situ recovery scheme approvals. The URF envisages cooperation between operators, who would be expected to combine their efforts, pool resources, co-ordinate activities for the use of common roads, pipelines and rights-of-way, and share infrastructure developments (such as water treatment facilities) to minimize surface impacts and noise/nuisance disturbances. A new unconventional oil and gas framework would be based on the fact that unconventional resources are more widespread (play-based) and therefore require risk-based and play-focused project area development plans with regulation that reflects this reality.

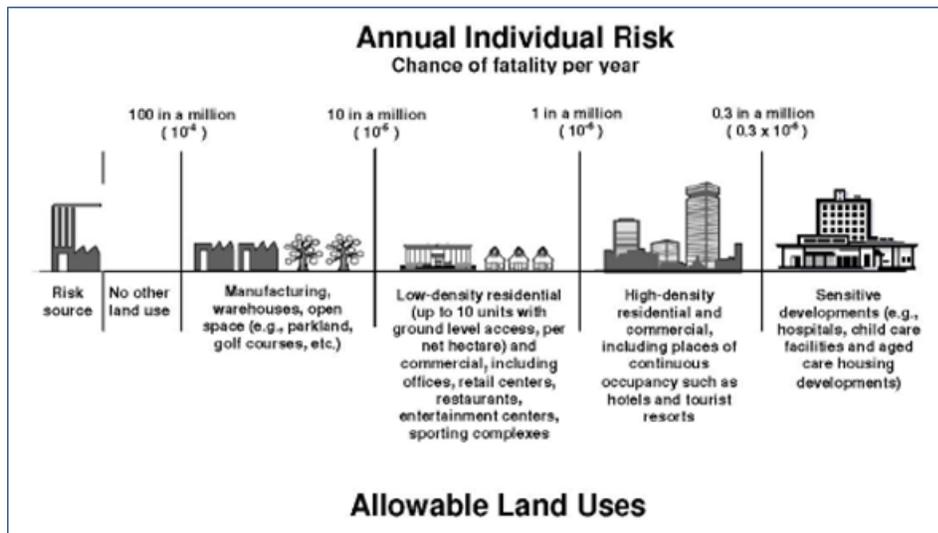
Area development plans - After a formal declaration of a play area the operators within that area would be expected to establish a play-focused operators group, and collaboratively develop an area that addresses five key issues: the protection and efficient use of water resources; minimizing surface disturbances of all kinds; maximizing resource recovery (including opportunities for enhanced recovery); proactively engaging local communities and stakeholders; and life-cycle well-bore integrity management. The discussion paper offers guidance as to how the plan should address the key issues. While this is evidently a priority of the policy makers and the regulator, it is disappointing that it is taking so long to implement. Release of the Discussion Paper was delayed; two years have elapsed since its release; and another year has passed while the AER is being organized.

In the absence of a formal new regulatory framework, industry is pushing ahead, though not necessarily collaboratively. Many companies are independently creating or improving stakeholder engagement and community relations policies, and implementing them as part of a new culture of corporate social responsibility. These companies have recognized the *business case* for being good neighbours: an enhanced corporate reputation and smoother and more effective regulatory approvals—that together positively impact the financial bottom-line.

Conclusion

It is quite clear, given the many decades of successful and continuously improving—and continuously evolving—regulation in western Canada, that development of non-conventional oil and gas can be accomplished to the overall benefit of society. More importantly it can be accomplished while the concerns of all the stakeholders are being taken into account and are mitigated. The experiences of the regulators, industry and citizens of western Canada over the past 75 years attest to that conclusion—and much of our experience is directly applicable to EU states.

Figure 1: Annual Individual Risk and Allowable Land Uses



Source: MIACC risk-based land use planning guideline modified by CSChE

About the Author

George Eynon is the managing director of **geos ♦ eynon & associates**, providing advice on oil & gas regulatory issues, community relations and stakeholder engagement, corporate governance and board issues, energy literacy training for governments, the oil & gas industry and the BComm program at the Haskayne School of Business at the University of Calgary. He has hands-on experience in regulation in the public interest, serving as: a full-time Board Member with the Energy Resources Conservation Board (ERCB) from 2008-2013; a Hearing Commission with the AER in 2013; a Councillor for APEGA; and a Director of Geoscientists Canada—all regulatory or self-regulatory agencies. He can be reached at george.eynon.geos@gmail.com

Endnotes

¹The Regulatory Craft: Controlling Risks, Solving Problems and Managing Compliance – Malcolm K. Sparrow - Council for Excellence in Government, The Brookings Institution Press - 2000

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³The Fifth Discipline: The Art & Practice of the Learning Organization – Peter M. Senge – Doubleday New York - 1990

⁴From an interview by Doug Gavel - May 1, 2008

⁵MIACC risk-based land use planning guideline as modified by the process safety management division of the Chemical Institute of Canada/Canadian Society for Chemical Engineering (CSChE).

⁶2013 ABAER 019

⁷<http://www.aer.ca/about-aer/who-we-are>

⁸2007 AERCB 061 – “The Board suggests that a plan with the following components would have greater success in meeting the needs of a community: Develop a plan and strategy to first understand the issues and concerns and then develop effective communication and consultation approaches. Discuss with the community and individuals how best to communicate with them. Develop an open and transparent system that documents concerns (with appropriate privacy considerations), tracks company commitments, and achieves timely follow-up to questions and concerns. Discuss options and methods with the residents on how best to resolve some or all concerns, including Appropriate Dispute Resolution, or if it appeared that after effective information.”

⁹<http://www.aer.ca/rules-and-regulations/directives>

¹⁰ CAPP – Canadian Association of Petroleum Producers - www.capp.ca

EPAC – Explorers and Producers Association of Canada - www.explorersandproducers.ca

CSPG – Canadian Society of Petroleum geologist – www.cspg.org

CSEG - Canadian Society of Exploration Geophysicists – www.cseg.ca

CSUR – Canadian Society for Unconventional Resources – www.csur.com

¹¹Regulating Unconventional Oil and Gas in Alberta: A Discussion Paper – ERCB 2012. http://www.aer.ca/documents/projects/URF/URF_DiscussionPaper_20121217.pdf

¹²For example, see Nigel Bankes blog January 10, 2013. <http://ablawg.ca/2013/01/10/a-new-approach-to-regulating-unconventional-resource-plays-in-alberta-the-ercb-takes-a-bold-step-forward/>

Secular Stagnation and Inequality

ADDENDUM

Karl Pinno

In my article in last month's GOE, I discussed how national, not global inequality, is the appropriate dimension for measuring inequality and how I believe it is an urgent priority for developed countries to address income inequality so as to promote economic growth. While I am pleased overall with how the article turned out, there is one area where I believe my exposition could have been more explicit. A reader pointed out that I failed to draw a proper distinction between rich countries and poor countries, and, perhaps by extension, inadvertently suggested that all nations – rich or poor – faced the same trade-offs. I do not in fact believe all nations must make identical trade-offs, nor does Richard Wilkinson,¹ the economist, whose research I cite below:

"Although economic growth remains important in poorer countries, across the richest 25 or 30 countries, there is no tendency whatsoever for health to be better among the most affluent rather than the least affluent of these rich countries. The same is also true of levels of violence, teenage pregnancy rates, literacy and maths scores among school children, and even obesity rates. In poorer countries both inequality and economic growth are important to outcomes such as health, but rich countries have reached a level of development beyond which further rises in material living standards do not help reduce health or social problems. While greater equality is important at all levels of economic development, the connection between life expectancy and Gross National Income per head weakens as countries get richer until, among the very richest countries, the connection disappears entirely."

Another economist, Ed Dolen, uses something called a Social Progress Index (SPI) for cross country comparisons and finds results similar to Wilkinson. The Dolen² post:

- provides SPI vs. GDP per capita (at PPP) for a much wider basket of countries than the basket of countries shown in Figure 7 in my article (useful because my article did not state a restriction to developed countries); and
- says *"we could say that for the poorer countries, GDP "explains" about two-thirds of differences in SPIs, but for the wealthier countries, only about one third."* (useful because of my intended focus on developed countries)

One of Dolen's conclusions:

"... saying that we should focus on welfare-enhancing policies leaves a lot of room for discussion about which policies best enhance welfare. The Social Progress Index is a grab bag of every good thing its developers could think of. Clearly, peoples' priorities differ. Some would prefer a focus on health, others on education, and still others on personal and political freedoms. The only point I insist on is that the proper guide to policy is some rationally weighted concept of human welfare rather than the mindless assumption that faster GDP growth will automatically take care of everything."

Finally, a weakness of the standard welfare approach in Economics (and I believe in Dolen's conclusions) is that it separates production versus redistribution concerns based on a concept called *"potential Pareto improvements"*. A set of posts at Interfluidity³ highlight how this is wrong, the centerpiece of which is a quote from Kenneth Arrow, winner of the Nobel Prize:

“As one economist put it:

The only concrete form that has been proposed for [a social welfare function grounded in ordinal utilities] is the compensation principal developed by Hotelling. Suppose the current situation is to be compared with another possible situation. Each individual is asked how much he is willing to pay to change to the new situation; negative amounts mean that the individual demands compensation for the change. The possible situation is said to be better than the current one if the algebraic sum of all the amounts offered is positive. Unfortunately, as pointed out by T. de Scitovsky, it may well happen that situation B may be preferred to situation A when A is the current situation, while A may be preferred to B when B is the current situation.

Thus, the compensation principal does not provide a true ordering of social decisions. It is the purpose of this note to show that this phenomenon is very general.

That economist was Kenneth Arrow. “This note”, circulated at The Rand Corporation, was the first draft of what later become known as Arrow’s Impossibility Theorem.”

More From Interfluidity:

“It is not, actually, an obscure result, this impossibility of separating “efficiency” from distribution. The only place you will not find it is in most introductory economics textbooks, which describe an “equity” / “efficiency” trade-off without pointing out that the size of the proverbial pie in fact depends upon how you slice it.

The welfare theorems are often taken as the justification for claims that distributional questions and market efficiency can be treated as “separate” concerns. After all, we can choose any distribution, and the market will do the right thing. Yes, but the welfare theorems also imply we must establish the desired distribution prior to permitting exchange, or else markets will do precisely the wrong thing, irreversibly and irredeemably. Choosing a distribution is prerequisite to good outcomes.

Distribution and market efficiency are about as “separable” as mailing a letter is from writing an address. Sure, you can drop a letter in the mail without writing an address, or you can write an address on a letter you keep in a drawer, but in neither case will the letter find its recipient. The address must be written on the letter before the envelope is mailed. The fact that any address you like may be written on the letter wouldn’t normally provoke us to describe these two activities as “separable.”

So while inequality is not as important or immediate an issue to developing countries as it is to OECD countries, research shows it still matters. Furthermore, economic theory teaches us that national welfare depends on policy makers choosing, simultaneously, a distribution of income and level of production through the laws, programs, and institutions they create. Economic consequences, efficient or otherwise, arise as a consequence of market design. They do not happen by accident or natural evolution. The financial collapse of 2008 should highlight this principle in bold. The economic system we fashion and the markets we design lead to outcomes. The same is true whether you are talking about China, Canada, USA, Germany, Russia, or Iran. Market design yields market behaviours and income distribution. The inequality we have today is the inequality we have engineered over the last 30 years. For the developed world, this means the resulting secular stagnation and slow growth comes to us not by accident but as a direct result of poor policy choices. Want more growth? Then choose a more equitable redistribution of production. This lesson is what the past history and current research I cite in my article is trying to teach us. What’s more, we will be happier as a society with a reasonable level of redistribution (and if we make the proper reforms, we can still have substantial inequality to preserve innovation incentives).

About the Author

Karl Pinno is a Ph.D candidate and Adjunct Professor of Economics at the University of Calgary. Mr. Pinno has worked in Corporate and Investment Banking, and was Senior Economist at the Canadian Energy Research Institute (CERI). He has published widely on economic matters and is author of the blog “Economic Presence – Paradox Found”.

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Telephone: (403) 220-2370; Fax: (403) 220-9579; Email: mmurphy@ceri.ca.

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