

ENERPO JOURNAL



EUROPEAN
UNIVERSITY AT
ST. PETERSBURG

AUGUST 2015

Volume 3
Issue 4



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CONTENTS

03 Iran versus Russia: Perspectives of Competition in the European Gas Market Dimitri Papamichaïl

ANALYSIS

In July 2015, negotiators from the P5+1 group (five permanent members of the UN Security Council plus Germany) reached a deal with Iran, according to which Iran would halt its nuclear research in exchange for the lifting the economic sanctions. At the margin of P5+1 negotiations, it has been recurrently mentioned that natural gas from Iran could become an alternative to Russian gas in the European market. The article looks at the perspectives of Iranian and Russian gas competition in the European market from the perspective of Iran's gas sector development, export potential and priorities (both pipeline and LNG), as well as bilateral relations between Iran and Russia.

Key words: Iran, Russia, sanctions, natural gas, European gas market

11 Renewable Energy in India: A Work in Progress Julie Jojo Nielen

ANALYSIS

India is one of the most rapidly developing countries in global energy. It plays an increasingly important role in terms of energy, and will undoubtedly move towards a more renewables-heavy energy mix in the future. However, there are still a myriad of problems to overcome. Although India is indeed committed to transitioning to a more low-carbon system, the current strategies are not the most conducive to this. This article argues that instead of large-scale projects, it is more recommendable for India to focus on smaller projects and distributed supply. Moreover, India will need to concentrate on restructuring the economic and legislative framework surrounding renewables eneration.

Key words: India, energy mix, renewable energy sources

19 TAPI Pipeline: Why It Should Remain Just a Pipedream Giovanni Pagotto

VIEWPOINT

The TAPI (Turkmenistan-Afghanistan-Pakistan-India) gas pipeline is a major project linking Central Asia and South Asia. In March 2015, Pakistani and Indian sources reported that a compromise was reached over Turkmenistan's conditions, which had previously hindered private financing, and that the construction of TAPI pipeline would start by the end of 2015. There is no decisive evidence that the project in fact will be started in the short term. This article looks at the main factors, which inhibit the development of energy challenges between the two regions and explains specific issues at play in the TAPI case.

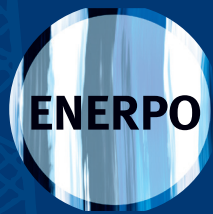
Key words: Central Asia, South Asia, TAPI, natural gas, international security

25 Russia-China Gas Deal: A Win-Win Jerry Byers

VIEWPOINT

There is a plethora of debate about the winners and losers in the 2014 finalisation of the Russia-China gas deal, a long-term contract for supply of up to 38 bcm of natural gas and construction of associated infrastructure. Most of the rhetoric focuses on the seemingly unavoidable trade-off, in which Russia has been forced to accept a less than advantageous deal with China and has sacrificed its interests out of desperation brought on by Western sanctions, low oil and gas prices, and a slowing economy. However, the developments that are now underway are neither an "unavoidable trade-off" or a "breakthrough". It is simply a matter of ideal timing for both parties to complete a deal that has been in the works for many years and can satisfy the needs for both parties in their changing energy needs.

Key words: Russia, China, natural gas, pipeline, gas pricing



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IRAN VERSUS RUSSIA: PERSPECTIVES OF COMPETITION IN THE EUROPEAN GAS MARKET

Dimitri Papamichail

Abstract

In July 2015, negotiators from the P5+1 group (five permanent members of the UN Security Council plus Germany) reached a deal with Iran, according to which Iran would halt its nuclear research in exchange for the lifting the economic sanctions. At the margin of P5+1 negotiations, it has been recurrently mentioned that natural gas from Iran could become an alternative to Russian gas in the European market. The article looks at the perspectives of Iranian and Russian gas competition in the European market from the perspective of Iran's gas sector development, export potential and priorities (both pipeline and LNG), as well as bilateral relations between Iran and Russia.

Key words: Iran, Russia, sanctions, natural gas, European gas market

In July 2015, negotiators from the P5+1 group (five permanent members of the UN Security Council plus Germany) reached a deal with Iran, according to which Iran would halt its nuclear research in exchange for the lifting the economic sanctions. At the margin of P5+1 negotiations (five permanent members of the UN Security Council plus Germany dealing with the Iranian nuclear issue), it has been recurrently mentioned that natural gas from Iran could become an alternative to Russian gas for Europe. This might have been an additional argument in favour of a deal, permitting to release investments towards the Islamic Republic of Iran and its gas sector in particular.¹ Indeed the 33,6 trillion cubic meters of natural gas that make Iran the world's second largest reservoir of the intangible fuel, may stimulate the pipe-fantasies of some Eurocrates, as well as the appetite of many businessmen in the old continent. Since the start of the Ukrainian crisis, the reliability of European gas imports is considered to be at threat once again, especially in Eastern and South-Eastern Europe. These areas rely, sometimes exclusively, on the Bratstvo and Soyuz pipe-

lines for their imports of gas (Figure 1). The initiation of the Trans-Anatolian Pipeline's (TANAP) construction, that coincided with the deal on Iranian nuclear programme, have brought a wind of hope regarding the possibility for Iranian gas to join this project.²

It is often proposed that any major gas pipeline link between Europe and Iran increases the former's arbitrage capacities and creates competition for the 135 bcm of Russian gas annually imported by the European states. What are the realistic perspectives of such major project in light of Iran's domestic gas sector management and rationale for exports? What is the possible impact of bilateral relations with Russia in Iran's choices in relation to gas exports to Europe?

IRAN AS A POTENTIAL NODAL SUPPLIER

Iran as an exporter is interested to diversify its export destinations in order to secure demand for its gas and reduce the risks. Besides these strategic considerations,

¹ Cerny, D. (2014), *EU Looks to Iran Gas Imports to Sap Russia's Energy Hold*, *Moscow Times*, 25 September. Available at: <http://www.themoscowtimes.com/business/article/eu-looks-to-iran-gas-imports-to-sap-russias-energy-hold/507783.html> [Accessed: 14 December 2014]

² Reuters (2015), *Iran May Join TANAP Gas Pipeline Project*, *Gulf Business*, 6 May. Available at: http://gulfbusiness.com/2015/05/iran-may-join-tanap-gas-pipeline-project/#.VVDBm_ntmko [Accessed: 10 May 2015]

macroeconomic indicators also become crucial when it comes to prioritising projects. In that respect, Europe as the target market for Iranian gas does not have the competitive advantage against other target markets even if the sanctions against Iran are lifted. The European market is remote thus requiring higher expenditures on delivery infrastructure, relatively well-served and stagnating. Moreover, the prices in Europe are generally lower than in Asia, and acknowledged as a source of concern, for example, by Mohsen Qasmari, head of International Affairs at the National Iranian Oil Company.³

Iran's export options could be categorised into the following groups: liquefaction projects in the Gulf; pipeline projects to the Arabian Gulf states; Iran-Pakistan-India (IPI) pipeline; further development of existing connections to Turkey and the Caucasian states.

The Iranian government's priority has been to develop LNG export facilities. The rationale for choosing this expensive option over others is rooted in the attractiveness of large markets like Japan, South Korea and China, which are also characterised by price levels higher than in other regions. This option was hindered by the UN sanctions, as a result of which several international energy companies had withdrawn from the Iranian gas sector, such as the French Total, which was expected to be the leading investor in Iranian LNG projects but had to step back.⁴ In this situation of extremely limited possibility to benefit from the international experience, the implementation of these projects is seriously hindered. Gazprom and CNPC who are dealing with Iran, have limited expertise when it comes to the development of liquefaction terminals. Consequently, the lift of sanctions and subsequent return of Western investors will give second chance to frozen LNG projects in Iran. Upon completion, these projects will serve as additional source of gas for the European market.

LNG exports are the only export option that was directly negatively affected by the withdrawal of Western companies. The sanctions regime did not affect the potential of Iran's pipeline exports to the Persian Gulf states. In the Gulf, there is a strong demand growth for natural gas stemming from the use of the enhanced oil recovery techniques (EOR), as well as increased use of gas for power generation. These factors have created an interesting market space for Iran in the Persian Gulf,⁵ even in the conditions of hostility between Iran and the Arab monarchies. A series of Memoranda of Understanding have been signed between Iran and its southern neighbours (except Saudi Arabia) for the construction of several small pipelines up to 10 bcm in each individual case. None of these projects has been realised yet. Most of them have been halted by the disagreement on pricing. The geopolitical arguments can never be excluded in this region.⁶ The recent aggravation of the Yemeni conflict, also viewed as a proxy-war between Iran and Saudi Arabia, is negatively affecting the perception of the Islamic Republic of Iran. This means that if the US needed to prevent Iran's export projects to the Gulf States, it would not be a difficult task. Yet, the commercial dynamics of the market is illustrated by the deal concluded in spring 2015 between Iran and Oman: the parties have agreed upon construction of an underwater natural gas pipeline supplying 10 bcm of gas annually.⁷

Iran-Pakistan-India pipeline (IPI) is another major project of gas export for the Islamic Republic. This project, which had been discussed since the 1990s, became more realistic in the mid-2000s as relations between India and Pakistan became less tense. The pipeline is expected to feed the Pakistani and Indian markets with 22 bcm of natural gas annually.⁸ The first phase of the pipeline is already completed and reaches the Iran-Pakistan border. Deliveries to Pakistan should have started at least from December 2014, however, they did not, since the Pakistani

⁵ Jalilvand, R. D. (2013), *Iran's gas exports: Can Past Failure Become Future Success?* Available at: <http://www.oxfordenergy.org/2013/06/irans-gas-exports-can-past-failure-become-future-success/> [Accessed: 14 December 2014]

⁶ *Ibid.*

⁷ Reuters (2015), *Iran Says Seals Gas Export Deal with Oman*, Reuters, 12 March. Available at: <http://www.reuters.com/article/2014/03/12/us-iran-oman-gas-idUSBREA2B24K20140312> [Accessed: 10 May 2015]

⁸ IGU (2009), *The Iran-Pakistan-India Pipeline Project*, IGU Magazine, April, pp. 234-253. http://members.igu.org/old/gas-knowhow/publications/igu-publications/publications/mag/apr-09/igu_april_2009_pages_234-back.pdf [Accessed: 14 August 2015]

³ *Iran Daily* (2015), *Iranian Official: Gas Exports to Europe Not Economical*, *Iran Daily*, 10 May. Available at: <http://www.iran-daily.com/News/117767.html> [Accessed: 10 May 2015]

⁴ Kozhanov, N. (2012), *Russia's Relations with Iran. The Washington Institute for Near East Policy*. Available at: <http://www.washingtoninstitute.org/uploads/Documents/pubs/PolicyFocus120.pdf> [Accessed: 14 December 2014]

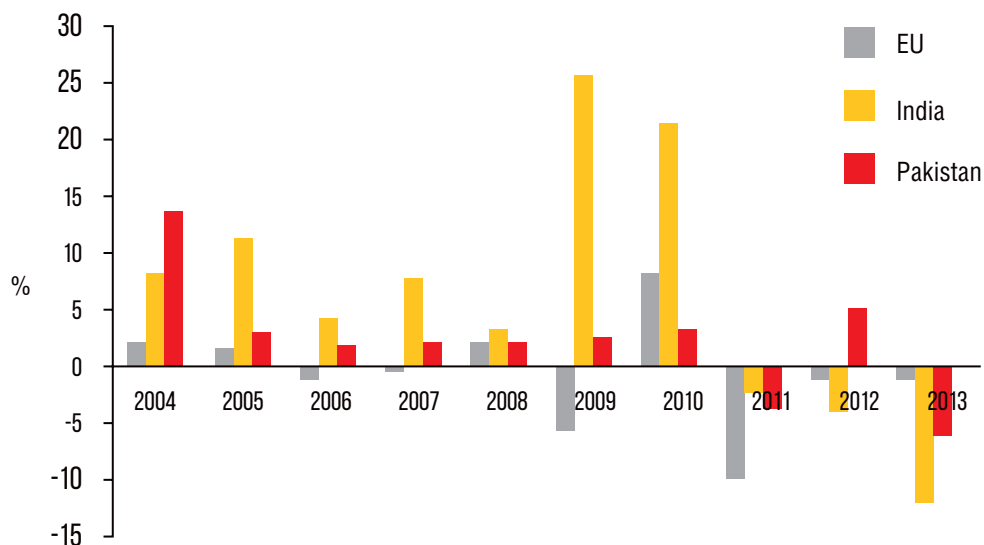


Figure 1. Annual change in natural gas consumption in India, Pakistan and the EU (2004-2013)
Source: BP Statistical Review of World Energy 2014

section is still not completed. Some experts speculated that the project was halted also due to the US pressure on both Pakistan and India.⁹ Even if this is true, a possible lift of the UN sanctions will actually release the obstacles to this pipeline rather than diverting the Iranian gas towards alternative directions. Figure 1 shows that despite the decreasing demand for gas in both India and Pakistan in the past couple of years, the decade-long record is more positive, especially when compared to Europe. Pakistan's demand grew by 30% (with shrinking domestic production), while the Indian consumption doubled, though reaching no more than 51,4 bcm in 2013 (and thus having huge development potential ahead).

Finally, when addressing the Iranian gas export choices, one should not forget the perspectives for Iran to further develop pipeline exports to Turkey. The 10-bcm Tabriz-Ankara pipeline is Iran's only real link to foreign markets, along with some minor connections to Armenia and Azerbaijan.¹⁰ The Minister of Oil of Iran has recently proposed to double gas volumes supplied to Turkey, but this proposal was declined.¹¹ The reason is Iran's failure as a reliable export partner: several shortages in Iranian Northern prov-

inces have resulted in interruptions of exports to Turkey, and the pipeline has only been used at 60% capacity since its inauguration in 2008.¹² These factors have undermined Turkey's confidence. Keeping in mind that Turkey itself is developing as a transit hub on the routes to European market, this situation is limiting potential of Iranian exports to Turkey itself, undermines Iran's potential as a supplier to the European market.

Overall, it is clear that Iran has huge reserves and strategically beneficial geographical position. It has options of natural gas exports in various directions, including the Persian Gulf states, South Asia, South Caucasus and Turkey, as well as LNG and the European market. However, having looked at each of the directions in detail, we can conclude that all of them are characterised by a host of problems, both [geo]political and economic in nature. The directions of exports, which may lead Iran to become the European supplier, are the most complicated out of all options, while the lifting of sanctions against Iran will primarily affect its capability to supply less remote markets, e.g. Pakistan and the Persian Gulf.

9 Jalilvand, R. D. (2013), *Iran's Gas Exports: Can Past Failure become future success?* Available at: <http://www.oxfordenergy.org/2013/06/irans-gas-exports-can-past-failure-become-future-success/> [Accessed: 14 December 2014]

10 *Ibid.*

11 Shaban I. (2015). *Why Turkey Rejects Doubling Iranian Gas Imports, Natural Gas Europe*, 16 April. Available at: <http://www.naturalgaseurope.com/why-turkey-rejects-doubling-iranian-gas-import-23219> [Accessed: 17 April 2015]

12 Jalilvand, R. D. (2013), *Iran's Gas Exports: Can Past Failure become future success?*

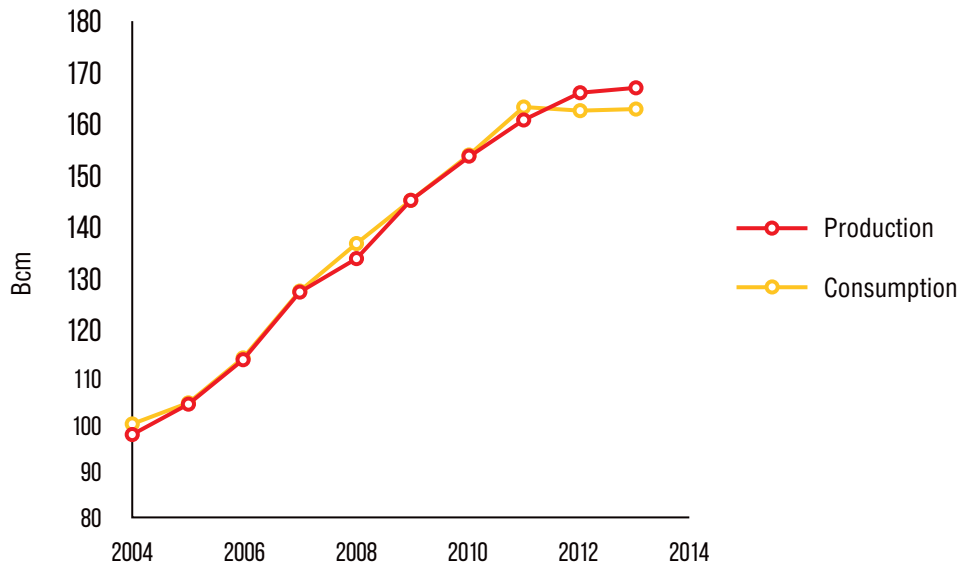


Figure 2. Iran's production and consumption of natural gas (2004-2013)
Source: BP Statistical Review of World Energy 2014

AN OUTLOOK OF THE DOMESTIC GAS MANAGEMENT: IRAN AS A FAILED EXPORTER

According to the BP Statistical Review, in 2013 Iran consumed 156 bcm of natural gas (which is more than Chinese consumption), and produced slightly more, up to 160 bcm (Figure 2).¹³ Iran became a net exporter of natural gas again only in 2012, after being a net importer from 1997 to 2011, with gas volumes coming from Turkmenistan. This surprising performance in terms of production (and Iran's gas reserves surpass those of Russia) is directly related to the political decisions taken by successive administrations, which resulted an increase in natural gas consumption in the total primary energy mix (TPES) from 15% in 1990 to 54% in 2013.

There are strong objections to foreign participation in Iran's oil and gas sector, especially when it comes from the Western companies. As discussed above, the lack of expertise has already put a strain on Iran's ability to develop LNG export industry. However, the cooperation with the Western companies, which have the expertise, needed to develop major projects, is not likely to be actively sought after by the new government.

Iran has the most heavily subsidised economy of the MENA region: subsidies reach \$80 billion and represent one fifth of the GDP.¹⁴ The natural gas sector is no exception. There are subsidies favouring overconsumption, which has resulted in the extremely rapid growth rates of the domestic market since 1990. During the 2000s, Ahmadinejad's administration was not successful in reforming this sensitive sector: violent protest broke out after the first attempt of reforms in 2007 which implied a progressive increase of gas prices and a switch to market-based pricing.¹⁵ These changes are still pending.

For the failure of capitalising on natural gas exports, Iranians blamed Ahmadinejad more than the sanctions.¹⁶ Rouhani's ascension in power was expected to drastically change the landscape. Rouhani's first task was to improve situation with exports by prioritising projects close to completion, in particular, the IPI pipeline. Notwithstanding the fact that these projects are not bringing any volumes to Europe, exports come only second in the government's concerns towards the natural gas industry: the satisfaction

13 BP (2014), *Statistical Review of World Energy*. <http://www.bp.com/content/dam/bp/pdf/Energy-economics/statistical-review-2015/bp-statistical-review-of-world-energy-2015-full-report.pdf> [Accessed: August 10, 2014]

14 Jalilvand, R. D. (2013), *Iran's Gas Exports: Can Past Failure become future success?*

15 Habibi, N. (2014), *Can Rouhani Revitalize Iran's Oil and Gas Industry?* Available at: <http://www.brandeis.edu/crown/publications/meb/meb80.html> [Accessed: 1mplied4 December 2014]

16 Ibid.

of domestic demand is far more crucial for the stability of the regime.¹⁷

Although Rouhani's administration has effectively taken measures in order to reform domestic pricing¹⁸ and brought some stability in the oil and gas management with the appointment of Bijan Namdar Zangeneh in the Oil Ministry, the new President has not changed the general perception of the investments coming from the West, nor the ineffective institutional framework to which international oil companies (IOC) have to adapt. The historical memory of a humiliating experience when the Anglo-Persian oil company, which had exploited Iran's national resources, and the anti-liberal ideology of the Islamic regime produced what Jalilvand called a "schizophrenic paradox": while suspecting foreign companies of acting against the national interests, the Iranian authorities are seeking investments and technology brought by those same companies. The result is a combination of mandatory buy-back contract schemes and a general suspicion of the Iranian authorities towards IOCs that originated investors' withdrawals even before the 2012 sanctions were imposed.

After the introduction of the sanctions in 2012, with some notable exceptions such as Schlumberger,¹⁹ the main foreign investors in the Iranian gas sector were the Russian companies (in particular Gazprom). In fact, Russian companies are left with a significant advantage in two ways. First, those who decided to stay in the Iranian energy sector expect to be in a better position than their European and American competitors when the sanctions will be lifted and frozen projects start running again.²⁰ Second, since they are not associated with any colonialist past or imperialist present, Russian companies can also expect to obtain a more favourable attitude from the

Iranian authorities. In relation to this last point, and acknowledging that in both Russia and Iran the gas sector is state-managed, one can expect interstate cooperation schemes to emerge. This becomes even more evident when broadening the picture of existing ties between the two countries, which have continued growing recently.

FROM THE "WATCHFUL PARTNERSHIP" TO THE "NATURAL ALLY": REDEFINING THE TIES BETWEEN IRAN AND RUSSIA

Experts observe an intensification in bilateral relations since the Islamic Revolution.²¹ The period from 1991 to 2011 can be characterised as "watchful partnership" (the Russian diplomacy was reluctant to consider Iran as a "strategic partner").²² The situation has drastically changed after the war in Ukraine and the rise of ISIS in Assad's Syria. In late 2014, Russian Foreign Minister Sergey Lavrov did not hesitate to call Iran a "natural ally".²³

From the Iranian side, officials have always been cautious when addressing their perspectives in the European market.²⁴ Qasmari's remarks on the unattractiveness of European prices can also be understood as a declaration tending to reassure the Russian partners. As a result of the sanctions imposed on Iran, Russia has increased its presence in the Iranian economy. Two main fields of cooperation include oil supplies and the Iranian nuclear programme.

As expected,²⁵ last June, a deal between has been reported,²⁶ on sales amounting 500 000 barrels of Iranian oil

17 Jalilvand, R. D. (2013), *Iran's Gas Exports: Can Past Failure become future success?*

18 Hafezi P. (2014), *Iran Fuel Price Hikes will be Big Test for Rouhani*, Reuters, 27 April. Available at: <http://www.reuters.com/article/2014/03/27/us-iran-subsidies-idUSBREA2Q09L20140327> [Accessed: 14 December 2014]

19 Edwards J. (2015), *Schlumberger Pleads Guilty to Violating U.S. Sanctions on Iran, Sudan*, Reuters, 25 March. Available at: <http://uk.reuters.com/article/2015/03/25/uk-usa-justice-sanctions-idUKKBNOML2J320150325> [Accessed: 26 March 2015]

20 Tomberg, I. (2009), *Iran in the European Gas Market: a Russian Point of View*, Institut Francais des Relations Internationales. Available at: http://www.ifri.org/?page=contribution-detail&id=5482&id_provenance=97 [Accessed: 14 December 2014]

21 Kozhanov N. (2015), *Understanding the Revitalization of Russian-Iranian Relations*, Carnegie Moscow Center. Available at: <http://carnegie.ru/2015/05/05/understanding-revitalization-of-russian-iranian-relations/i86n> [Accessed: 8 May 2015]

22 Kozhanov, N. (2012), *Russia's Relations with Iran. The Washington Institute for Near East Policy*. Available at: <http://www.washingtoninstitute.org/uploads/Documents/pubs/PolicyFocus120.pdf> [Accessed: 14 December 2014]

23 Kozhanov N. (2015), *Understanding the Revitalization of Russian-Iranian Relations*.

24 Tomberg, I. (2009), *Iran in the European Gas Market: a Russian Point of View*.

25 Baczynska G. (2015), *Russia Opens Way to Missile Deliveries to Iran, Starts Oil-for-Goods Swap*, Reuters, 13 April. Available at: <http://www.reuters.com/article/2015/04/13/us-iran-nuclear-russia-idUSKBN0N40YX20150413> [Accessed: 15 April 2015]

26 Motevalli, G. (2015), *Russia Set to Start Iran Crude Imports Under Oil-for-Goods Deal*, Bloomberg, 6 June. Available at: <http://www.bloomberg.com/news/articles/2015-06-06/russia-set-to-start-iran-crude-imports-under-oil-for-goods-deal> [Accessed: 20 June 2015]



Figure 3. Net oil export and GDP growth rates in Iran
Sources: EIA 2014; World Bank 2015

per day in exchange of agricultural products from Russia. Indeed, as a consequence of the sanctions regime, Iranian oil exports fell from 2,5 million barrels per day in 2010 to less than 1 million barrels per day in 2014, resulting in a GDP contraction of 5% for the first time in 30 years (Figure 3). In fact, Tehran is concerned about its oil exports more than its gas exports, since they constitute a larger share of the national budget. According to recent estimates, oil sales provided 75% of total earnings from hydrocarbon exports.²⁷ A potential deal with Moscow to sell significant amounts of oil can therefore become a relief for the Iranian government, and has in addition the benefit of guaranteeing food security, which is another main area of concern for the Iranian government.²⁸ When it comes to the nuclear sector, the cooperation is even stronger. Rosatom is the contractor for the construction of the controversial Bushehr NPP project. Although the completion of the project has been delayed for more than a decade, subjected to the several undulations in bilateral relations, the power plant was successfully completed in September 2013. In autumn 2014, Russian

experts proposed plans for an extension of the present facility and to build new reactors.²⁹ This explains Russia's position in favour of Iran in the P5+1 negotiations.

Military cooperation is another major issue in bilateral relations. Firstly, it is linked to the nuclear problem – since sometimes the delivery of Russian S-300 are associated with potential to defend nuclear sites against possible attacks. Secondly, the Middle East is in general an important destination for Russian military equipment, and Iran plays an important role for Russia in that respect. Military cooperation between Russia and Iran was revived after Putin's decision to resume the missile deliveries (previously blocked by Medvedev in 2010).

Other factors that result into convergence of Russian and Iranian positions include:

- Common position on Syria since 2011 and against ISIS since 2014;
- Deterioration of Russia's relations with the West which pushed Moscow to seek new alliances elsewhere;

²⁷ Heuty, A. (2012), *Iran's Oil and Gas Management, Revenue Watch Institute*. Available at: <http://www.resourcegovernance.org/publications/iran%E2%80%99s-oil-and-gas-management> [Accessed: 14 December 2014]
²⁸ Kozhanov N. (2015), *Understanding the Revitalization of Russian-Iranian Relations*.

²⁹ *World Nuclear News (2014), Russia to Build Eight More Reactors in Iran, 11 November*. Available at: <http://www.world-nuclear-news.org/NN-Russia-to-build-eight-more-reactors-in-Iran-11111401.html> [Accessed: 20 June 2015]

- Importance to have partners particularly in the Middle East, where the Libyan debacle combined with the Syrian civil war had weakened the Russian presence.

Obviously, it looks likely that cooperation between two countries will increase in the future. Not surprisingly then, during the eleventh meeting of the joined Russian-Iranian Economic Commission in September 2014, Russia and Iran have agreed to increase the volume of bilateral trade tenfold by 2017, up to \$15 billion.³⁰

Given the positive environment in which the bilateral relations are evolving, after the 2014 decision to cancel the South Stream project and develop a new route through Turkey to bypass Ukraine, one may even expect volumes of Iranian gas to join Gazprom's project with minor infrastructure developments within the Turkish territory. Not surprisingly, this solution was publicly considered by Iranian officials.³¹ This may give Gazprom a possibility of adapting the pipeline to the EU legislation on third party access, with a "third party" rather willing to cooperate.

CONCLUSIONS

In the context of lifting the sanctions, Iran is close to becoming a significant exporter of natural gas. This might lead to the proposition that it will develop into Russia's key competitor in the European gas market: the bases for such reasoning include Iran's huge gas reserves (surpassing Russia's reserves), low marginal costs for major fields, geographic location, and European aspirations to decrease the share of Russian gas in its supply mix. However, such competition is not as realistic as it might seem from the first sight.

Firstly, the European gas market is low on Iran's gas export priorities. Secondly, the problems in the organisation of the Iran's gas sector may further inhibit the increase of natural gas exports. Thirdly, Iran views Russia as an important partner, and cooperation between the two countries ranges from oil sales to nuclear energy and supplies of military

equipment. Under these circumstances, it is difficult to imagine the Iranian authorities undermining their only ally in the nuclear talks for any deal providing significant amounts of natural gas to Europe. And if such a deal is not planned today then not only it is unlikely to happen in the near future, but even later developments are compromised since pipeline infrastructure projects are planned several years in advance.

³⁰ *Ibid.*

³¹ IRNA (2015), *Iran, Russia Yet to Discuss Possible Turkish Stream Cooperation*, 6 June. Available at: <http://www.irna.ir/en/News/81635167/> [Accessed: 20 June 2015]

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RENEWABLES IN INDIA: A WORK IN PROGRESS

Julie Jojo Nielen

Abstract

India is one of the most rapidly developing countries in the world. It plays an increasingly important role in global energy, and will undoubtedly move towards a more renewables-heavy energy mix in the future. However, there are still a myriad of problems to overcome. Although India is indeed committed to transitioning to a more low-carbon system, the current strategies are not the most conducive to this. Instead of large-scale projects, it is more recommendable for India to focus on smaller projects and distributed supply. Moreover, India will need to concentrate on restructuring the economic and legislative framework surrounding renewables generation.

Key words: India, energy mix, renewable energy sources

As a nation of more than 1,2 billion people, the tenth economy of the world and one of the most rapidly developing countries globally, India is becoming an increasingly important player in terms of energy. The urgency of India's energy needs is not only underlined by its rapid economic growth and thus burgeoning energy consumption, but also by the fact that energy diplomacy has been the main pillar of the recently elected government of Prime Minister Narendra Modi's foreign policy. Apart from energy security, affordability and accessibility, Modi has underlined

the necessity of transitioning to a more sustainable energy model. Modi's public commitment to renewable energy sources (RES) are a watershed moment for India. However, although India is definitely a promising player in the RES field and will undoubtedly move towards a more RES heavy energy mix in the future, there are still a myriad of problems to overcome.

What particular problems will India encounter on their path to a more sustainable energy model and how

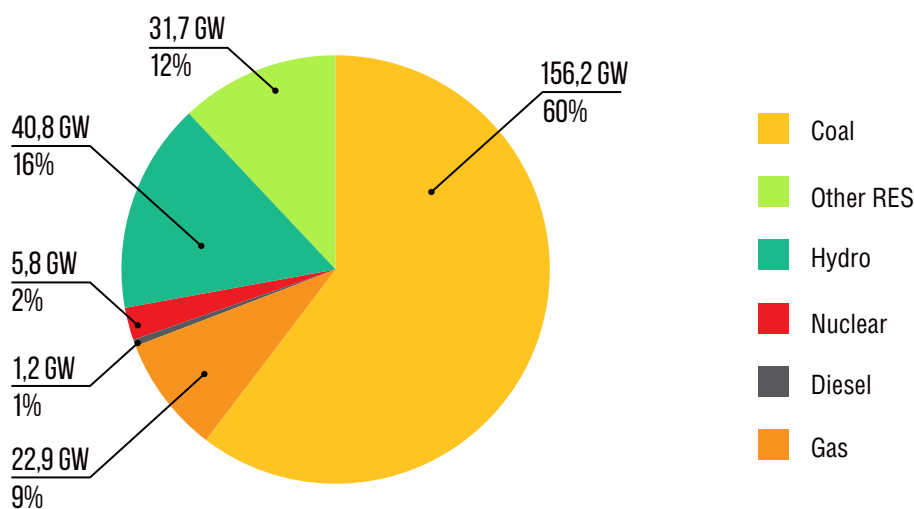


Figure 1. India's installed electricity capacity
Source: Central Electricity Authority

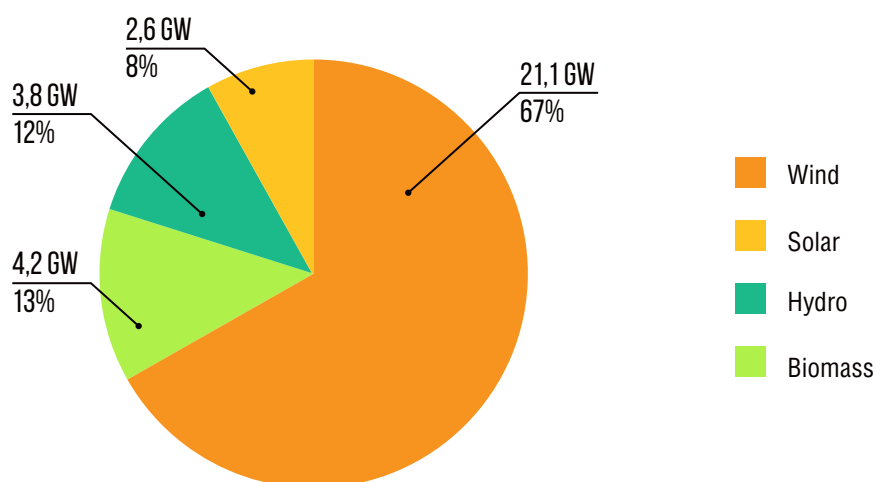


Figure 2. Renewables capacity in India
Source: Central Electricity Authority

promising is India as an RES player? What are Modi's specific RES strategies and are his policies sufficiently encouraging to achieve these targets?

INDIA'S ELECTRICITY MIX

India is currently the fifth largest consumer of electricity in the world after the US, China, Japan and Germany.¹ India has 258,7 GW of installed electricity capacity.² Most of this is accounted for by coal, which is the absolute king of the country's energy mix. As can be seen in Figure 1, coal accounts for around 60% of India's electricity mix with non-hydro RES representing 12,3%.

A closer look at this 12,3% (or 31,7 GW) of RES reveals that the bulk of it is accounted for by wind. As can be seen in Figure 2, India currently has 21,1 GW of wind power capacity installed, which is two-thirds of country's total installed RES capacity. This is followed by biomass (4,2 GW or 13%), small hydro (3,8 GW or 12%) and solar (2,6 GW or 8%).³

India currently has the fifth largest wind generation capacity globally, after China, Germany, the US and Spain, and

1 **Central Intelligence Agency (2015), The World Factbook; Country Comparison: Electricity – Consumption.** Available at: <https://www.cia.gov/library/publications/the-world-factbook/rankorder/2233rank.html> [Accessed: April 30, 2015]

2 **Central Electricity Authority, Government of India, Ministry of Power (2015), Monthly All India Installed Generation Capacity Report.** Available at: http://www.cea.nic.in/reports/monthly/inst_capacity/jan15.pdf [Accessed: April 30, 2015]

3 *Ibid.*

accounts for 6,1% of total installed wind capacity worldwide.⁴ Another notable point is that although their solar capacity is still negligible, it has seen a hundredfold growth since 2010.⁵

TARGETS

The Modi administration has stated they want to increase the share of RES in India's energy mix, which is definitely underlined by the current targets in place and modelled after Modi's 2014 campaign slogan, "India will generate enough renewable power to run a light bulb in every house by 2019." This is a good example of how ambitious Modi's goals are in regards to RES.⁶ Considering the fact that over 80 million households (>400 million people) in India are either energy poor or have no access to the grid whatsoever, one might even say overly ambitious.⁷

Campaign slogans aside, Modi has also launched two official strategies. These are divided into two time periods; from now until 2022, (when the country celebrates

4 **Global Wind Energy Council (2015), Global Statistics.** Available at: <http://www.gwec.net/global-figures/graphs/> [Accessed: April 30, 2015]

5 **Ravindran, S. (2014), India's Push for Renewable Energy: Is It Enough?, National Geographic.** Available at: <http://news.nationalgeographic.com/news/energy/2014/09/140919-india-modi-renewable-energy-science-world-wind-solar/> [Accessed: April 30, 2015]

6 **Katakey, Rakteem and Chakraborty, Debjit (2015), Modi to Use Solar to Bring Power to Every Home by 2019, Bloomberg.** Available at: <http://www.bloomberg.com/news/articles/2014-05-19/modi-to-use-solar-to-bring-power-to-every-home-by-2019> [Accessed: April 30, 2015]

7 **Climate Group (2015), The Business Case for Off-Grid Renewables in India.** Available at: <http://www.dalberg.com/wp-content/uploads/2015/02/The-business-case-for-offgrid-energy-in-India.pdf> [Accessed: April 30, 2015]

75 years of independence), and from 2022 until 2050, a strategy that is commonly referred to as 'Desert Power India'.⁸

The 2022 target is to increase RES generation capacity by 160 GW, 100 GW of which will be solar power and 60 GW of which will be wind. If achieved, renewable energy would then account for 15% of their total energy supply.⁹

This 160 GW strategy is mostly focused on mega solar and wind facilities, for which €7,3 billion has been allocated and which will be primarily located in four areas in the northwest and far southeast: Rajasthan, Gujarat, Tamil Nadu and Ladakh. Additionally, money has been set aside for solar powered water pumps (€5,8 billion) and solar panels to cover canals and rooftops (€1,4 billion).¹⁰

'Desert Power India' has a similar focus, with the overall objective being to increase generation capacity from RES to 445 GW by 2050, which would translate to over 35% of their total electricity consumption. Again, the main focus lies on mega wind and solar farms, which are set to account for 300 GW of capacity and would be located in the far northwest, which is desert land. Additionally, 55 GW would be derived from the four regions that currently already hold the highest wind capacity: Tamil Nadu, Karnataka, Andhra Pradesh and Maharashtra. Furthermore, 70 GW would be derived from smaller solar and wind projects and 30 GW from offshore wind farms.¹¹

These plans are far reaching and mostly focused on mega facilities that are to be located in roughly the same areas. Although not a fraught strategy per se, it could lead to certain problems over time and fail to provide for the intended goals.

8 **Bhaskar, Uptal (2014), Budget Stresses on Clean Energy Resources, Live Mint.** Available at: <http://www.livemint.com/Politics/fUzkHkQ5VKZ73v6Ke-ajpAM/Arun-Jaitley-allocates-Rs-1000-crore-for-renewable-sector-s.html> [Accessed: April 30, 2015]

9 *Ibid.*

10 *Ibid.*

11 **Power Grid Corporation India Ltd. (2013), Desert Power India – 2050.** Available from: https://www.powergridindia.com/_layouts/PowerGrid/WriteReadData/file/ourBusiness/SmartGrid/desert_power_india.pdf [Accessed: April 30, 2015]

DRIVERS OF RES GROWTH

Although there are the overarching issues of pollution from heavy reliance on coal and global climate change, India also has some specific reasons to pursue a more sustainable energy mix. The primary reason is India's heavy dependence on energy imports accounting for around 30% of total primary energy mix and this number is rising. Import dependency does not only affect their energy security, but is also a huge strain on the government budget.¹² The Indian government currently spends €136 billion per year on energy imports, which accounts for 7,5% of the country's GDP.¹³ Decreasing import dependency could mean a big change for the country's economy.

Furthermore, India is very heavily dependent on coal. This does not only cause wide-scale air pollution, but also affects public health in more direct ways. Because of the high occurrence of energy poverty in India, many people still use coal for cooking and household heating, which leads to a plethora of serious health problems mostly in rural areas.¹⁴ Moreover, the coal sector in India has continually been troubled by inefficiency and infrastructure problems that leaves them ever dependent on imports despite having considerable domestic reserves.¹⁵

Tackling climate change is a growing matter of urgency for the country. Although formerly a great proponent of the 'catching up' principle,¹⁶ India has come to acknowledge the dangers of climate change in recent years. Most alarming are emerging assessments such as the Maplecroft Climate Change Vulnerability Index. According to Maplecroft, India is one of the most vulnerable countries

12 **International Energy Agency (2015), India: Balances.** Available from: <http://www.iea.org/statistics/statisticssearch/report/?country=India&product=balances&year=2012> Accessed: April 30, 2015]

13 **Bhaskar, Uptal (2014), Budget Stresses on Clean Energy Resources, Live Mint.**

14 **Climate Group (2015), The Business Case for Off-Grid Renewables in India.**

15 *Apart from logistical problems, the Modi administration is currently also investigating corruption in coal tenders, which has brought to light many systemic issues in the sector. For more info, see: Crabtree, James (2015), India's former leader Manmohan Singh summoned in coal block probe, Financial Times, 11 March.* Available at: <http://www.ft.com/intl/cms/s/0/d23b8988-c7be-11e4-9226-00144feab7de.html?siteedition=intl#axzz3U41bqNVu> [Accessed: April 30, 2015]

16 *The idea that developing countries have the right to 'catch up' with developed nations and are thus not obliged to curb their emissions, since the developed world did not do that either during their time of rapid growth.*

in the world when it comes to the adverse effects of climate change.¹⁷ This is mostly because of desertification and the loss of associated farmland adding to food scarcity and the dangers of flooding as a big part of the population lives below the flood line.¹⁸

Although push factors are indeed most notable when it comes to India's reasons to move towards RES, there are pull factors involved as well. Firstly, RES development is associated with job generation and it is estimated that in 2014, 70 000 jobs in the country were directly associated with RES.¹⁹ Secondly, and most importantly, RES suit the specifics of the Indian situation. RES are mostly associated with distributed generation, i.e. smaller scale plants close to market. In a country as big as India and with a population as spread out, distributed generation would be a perfect solution to reach energy-poor regions that could only be connected to the main grid with great difficulty.²⁰

POLICIES AND PLANNING

India's current budget has €14,5 billion allocated to RES, which is a 25% increase from the last budget under Prime Minister Manmohan Singh. Most of this is to be invested in the construction of mega wind and solar farms.²¹ The Modi government has also increased the levies on coal, which have gone up from €0,75 to €1,50 per tonne. The income derived from these additional levies will in turn be used to fund RES projects.²² In contrast with the coal levy, customs duties on solar panels and wind turbine parts were lowered from 10% to 5%.²³

17 Verisk Maplecroft (2014), *Climate Change and Environmental Risk Atlas 2015*. Available at: <http://maplecroft.com/portfolio/new-analysis/2014/10/29/climate-change-and-lack-food-security-multiply-risks-conflict-and-civil-unrest-32-countries-maplecroft/> [Accessed: April 30, 2015]

18 *Ibid.*

19 Jaiswal, Anjali (2014), *New Report Series: India's Burgeoning Solar and Wind Energy Markets Jumpstarting Job Growth, Switchboard, Natural Resources Defense Council*. Available at: http://switchboard.nrdc.org/blogs/ajaiswal/new_report_series_indias_burge.html [Accessed: April 30, 2015]

20 Climate Group (2015), *The Business Case for Off-Grid Renewables in India*.

21 Bhaskar, Uptal (2014), *Budget Stresses on Clean Energy Resources*, Live Mint.

22 Climate Group (2015), *The Business Case for Off-Grid Renewables in India*.

23 Bhaskar, Uptal (2014), *Budget Stresses on Clean Energy Resources*, Live Mint.

Another showpiece of India's RES strategy is the development of so-called 'green corridors', which are a holdover from the Singh era.²⁴ This project focuses on the transit of electricity and is designed to get power from mega plants to market. This has been a continuing issue in India, where mega plants do add to overall generation capacity, but this capacity does not always reach the market.

Lastly, there is a clear focus on creating the best possible investment climate for RES in India. Although India is perceived as relatively reliable in terms of investment, there are still many hurdles for foreign direct investment (FDI). However, in terms of energy investment, the RES sector is absolutely hospitable for foreign investors. For instance, apart from more conventional incentives such as feed-in tariffs and fiscal incentives, RES are the only energy sector in which 100% FDI is possible and it also works with a 'build, own, operate'-structure.²⁵ This means that investors are allowed to be in control of every part of the RES value chain and makes investing considerably more attractive.

EVALUATION: PROBLEMS

Despite the clear commitment of the Modi government to move towards a more sustainably powered economy, the variety of motivations to do so and the elaborate strategies in place, the implementation of certain policies might yet prove problematic. Modi's plans are globally lauded, but there are reasons to be skeptical about India's 'green future' still.

One of the most problematic issues regarding the current strategies is the lack of budget. Although the current government has allocated significantly more towards RES development than the last, €14,5 billion is still considered to be too modest by many experts. Construction of one GW of solar power within a mega plant is estimated to cost

24 Bhaskar, Uptal (2014), *Power Grid Corporation India Ltd. (2012), Report on Green Energy Corridors*. Available at: <http://re.indiaenvironmentportal.org.in/files/file/Report-Green%20Energy%20corridor.pdf> [Accessed: April 30, 2015]

25 KPMG (2014), *India: Taxes and incentives for renewable energy*. Available at: <http://www.kpmg.com/global/en/issuesandinsights/articlespublications/taxes-and-incentives-for-renewable-energy/pages/india.aspx> [Accessed: April 30, 2015]

around €1 billion, it is unlikely India can meet its goals.²⁶ Hence, many experts state that at least a tenfold increase in budget is needed.²⁷

Secondly, although there are mechanisms in place to raise more tax income for renewables, funds are not always correctly allocated. According to the Economic Times, only one per cent of collected taxes were being allocated to RES under the previous government and Modi has also announced plans to use money from the Ministry of New and Renewable Energy to clean up the Ganges, which is considered to be a dubious allocation of the funds.²⁸

Other problematic issues mostly relate to the location and size of the proposed RES facilities. One point is the big focus on mega plants, a curious choice considering the fact that demand in India is distributed over vast territories and, consequently, already existing problem of getting electricity to end users.²⁹ Mega plants take years to build, whilst smaller scale plants could satisfy demand much quicker.³⁰ Generation capacity is being added in a very limited number of regions. All these factors together suggest that even if green corridors could be constructed to get the power to market, most of this will be in the same areas, leaving the rest of India lagging behind.³¹

All this is exacerbated by a serious lack of effective legislation. For instance, there are discrepancies between the national and regional legislation in regards to the use of farmland for RES. As of now, it is yet unclear whether farmland can be used for RES projects.

Similarly, there is no legislation in place regarding rooftop solar projects. As the vice president of Welspun Energy, a New Delhi based independent power company

26 IRENA (2015), *Renewable Power Generation Costs in 2014*. Available at: http://www.irena.org/DocumentDownloads/Publications/IRENA_RE_Power_Costs_2014_report.pdf [Accessed: April 30, 2015]

27 Ravindran, S. (2014), *India's Push for Renewable Energy: Is It Enough?*, *National Geographic*. Available at: <http://news.nationalgeographic.com/news/energy/2014/09/140919-india-modi-renewable-energy-science-world-wind-solar/> [Accessed: April 30, 2015]

28 *Ibid.*

29 *Climate Group (2015), The Business Case for Off-Grid Renewables in India.*

30 Ravindran, S. (2014), *India's Push for Renewable Energy: Is It Enough?*

31 *Climate Group (2015), The Business Case for Off-Grid Renewables in India.*

pointed out, "There is no database. We don't know where the roofs are. We don't have any policy or laws on rooftop solar energy. Roof rights, maintenance of roofs and access rights are not defined by the law".³² Also, there is a lack of research regarding wind development; wind patterns as well as grid infrastructure to transmit over-capacity are currently insufficiently researched.³³

Other problems are more systemic and thus even less easily solved.

There is great hesitation among investors to go big on RES. Many private investors find both the Indian investment climate and the particulars of the market too unstable; apart from the fact that the India economy is still unstable, the sector itself is also anything but static. This leads to fears that by the time certain mega-projects might be completed, the technology would already be outdated.³⁴ As for public funding, many public financial institutions currently have funds tied up in thermal energy, which was a focus of the Singh government, and are hesitant to jump into new projects.³⁵

There is also a problem of cost. With a GDP per capita of less than €1 500 per year,³⁶ there is a strong need for low energy prices in India. This means that more costly projects would need to be subsidized largely erasing the advantage of lowering import expenditures as a switch to renewables is made.

Lastly, land scarcity is a serious concern. Apart from the discrepancies in legislation between the different levels of government regarding (farm) land acquisitions, there are projects that have been cancelled for environmental concerns as well. The best known example of this is the Thar Desert solar project, which would have been the biggest solar plant in the world with 4 GW of capacity. The project was cancelled because of bird migration

32 Parvaiz, Athar (2015), *India's Tough Renewable Targets*, *SciDevNet*. Available at: <http://www.scidev.net/south-asia/environment/news/india-s-tough-renewable-energy-targets.html> [Accessed: April 30, 2015]

33 *Ibid.*

34 *Ibid.*

35 *Ibid.*

36 *World Bank (2015), Data: India*. Available from: <http://data.worldbank.org/country/india> [Accessed: April 30, 2015]

and the close proximity to a nature wetlands reserve.³⁷ Because of land scarcity, no other location could be found. Land scarcity was also underlined in the struggle between the military and the national government in regards to land acquisitions for solar plants. The national government tried to acquire vacant military land in order to repurpose it for RES development, but the military refused, citing land scarcity.³⁸

EVALUATION: POSITIVES

The Indian path to a RES-heavy economy will not be easy. Ambitious plans do not make up for the fact that there are still a lot of problems and insecurities associated with RES development. The peculiarities of the strategies chosen, the lack of a clear legal and economical framework and systemic issues such as land scarcity and inability to charge high prices to the population might make one sceptical about India's RES potential. However, there are currently several positive developments under way and if the Indian government chooses wisely, they might still achieve their ambitious goals.

One of the most promising aspects of Indian RES is the current rise of small-scale solar projects. For instance, the American solar panel company First Solar is currently working together with several bigger corporations in India (such as Microsoft India and Cisco) to power offices with solar panels.³⁹ Developments like these have great spill-over potential and allow for the development of best practices, the experience of which could then be used in policy making.

A good example of the potential of bottom-up developments in RES is the case of the Indian snack major Hali-dram. This company started out with solar panels on a few factories and is now involved in government tenders

to develop larger solar plants.⁴⁰ Similarly, the Indian Railways – the biggest electricity consumer in the country – has recently announced that they will allocate €1 billion for RES development to power not only trains but also train stations in rural areas, thus providing smaller villages with sustainable energy.⁴¹

Moreover, the decentralized RES market has seen great growth in the last years and there are currently over 40 companies active in the development of solar lanterns and small-scale solar home systems. According to a Climate Group report in cooperation with Goldman Sachs, the market penetration of solar lanterns will be 35% by 2018. It is exactly these sorts of small-scale projects that are not only perfectly suited to India's highly distributed demand, but are also beneficial from a cost and time perspective.⁴²

CONCLUSIONS

India is committed to transitioning towards a more sustainable energy model. India's heavy reliance on coal and energy imports, combined with high energy poverty, an intense – it is clear from Modi's rhetoric, policies and strategies that vulnerability to climate change and a very distributed demand, makes the choice for RES almost a so-called 'no brainer'.

However, there are many potential stumbling blocks on the road to a more sustainable energy model. Understandably from a political perspective, Modi's focus on mega plants and a very limited amount of regions might not be the best choice for India. The problems with getting the power from these concentrated mega plants to market will be one of the biggest hurdles for India in the future and it is not unreasonable to assume this might not be the best strategy.

37 Saket, S. (2014), *India's plan for world's largest solar farm may stumble over wetlands*, *The Guardian*. Available at: <http://www.theguardian.com/environment/2014/feb/11/india-worlds-largest-solar-farm-wetlands> [Accessed: April 30, 2015]

38 Ranjan, A. (2014), *Can't Spare Land for Solar Power: MoD*, *Indian Express*. Available at: <http://indianexpress.com/article/india/india-others/cant-spare-land-for-solar-power-mod/> [Accessed: April 30, 2015]

39 Upadhyay, Anand (2015), *First Solar Looks to Cash in on the Green Mood in India*, *Clean Technica*. Available at: http://cleantechnica.com/2015/03/17/first-solar-looks-cash-green-mood-india/?utm_source=dlvr.it&utm_medium=twitter [Accessed: April 30, 2015]

40 Upadhyay, Anand (2014), *Snack Major to Stock Broker – Everyone Joins Telangana Solar Party*, *Clean Technica*. Available at: <http://cleantechnica.com/2014/11/20/snack-major-stock-broker-everyone-joins-telangana-solar-party/> [Accessed: April 30, 2015]

41 Climate Group (2015), *Railways Essential to Sustainable Prosperity in India Says Minister Prahbu*. Available at: <http://www.theclimategroup.org/what-we-do/news-and-blogs/railways-essential-to-sustainable-prosperity-in-india-says-minister-prahbu/> [Accessed: April 30, 2015].

42 Climate Group (2015), *The Business Case for Off-Grid Renewables in India*.

One of the main comparative advantages of RES, namely distributed generation, seems to be lost on the current government.

Furthermore, there is a definite lack of a legal and economical framework. India is still regarded as an insecure investment destination and this, combined with a lack of legislation on land and rooftop usage, is a major damper on possible investments. This is specifically problematic because the funds allocated by the government are not yet in line with the size of its RES ambitions.

However, all hope is not lost. If India manages to develop more conclusive legislation and research for RES and would encourage small scale, bottom-up initiatives rather than focusing solely on mega projects, India could yet become a massive RES player. The willingness, ambition and determination are already present, now it is time to tailor the policies to meet the needs of the country.

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INTERNATIONAL ENERGY CENTER AT EUSP



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- Organisation of regular seminars, roundtables and forums with representatives of Russian and foreign companies, public sector bodies, and leading research institutes

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- Energy and environment
- Coal
- Nuclear power
- Renewable energy

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TAPI PIPELINE: WHY IT SHOULD REMAIN JUST A PIPEDREAM

Giovanni Pagotto

Abstract

The TAPI (Turkmenistan-Afghanistan-Pakistan-India) gas pipeline is a major project linking Central Asia and South Asia. In March 2015, Pakistani and Indian sources reported that a compromise was reached over Turkmenistan's conditions, which had previously hindered private financing, and that the construction of TAPI pipeline would start by the end of 2015. There is no decisive evidence that the project in fact will be started in the short term. This article looks at the main factors, which inhibit the development of energy challenges between the two regions and explains specific issues at play in the TAPI case.

Key words: Central Asia, South Asia, TAPI, natural gas, international security

On March 15, 2015 in occasion of a dedicated intergovernmental meeting in Kabul, the negotiations over the construction of TAPI (a gas pipeline passing through the territories of Turkmenistan, Afghanistan, Pakistan and India) removed significant hindrances towards the implementation of the project. According to Sartaj Aziz, adviser to Pakistan's Prime Minister on national security and foreign

affairs, the project can already be launched by the end of the year.¹ According to the reports, the most significant achievement was a compromise over ownership and private investment issues in Turkmenistan's upstream segment.²

¹ Tanchum, M. (2015), *A Breakthrough on the TAPI pipeline?* *The Diplomat*, 20 March. Available at: <http://thediplomat.com/2015/03/a-breakthrough-on-the-tapi-pipeline/> [Accessed: 02 May 2015]

² *Ibid.*

PROJECT	CAPACITY	LENGTH AND COST	GAS PRICING	NOTES
Turkmenistan-Afghanistan-Pakistan-India Pipeline (TAPI)	33 billion cubic metres annually To Pakistan: 38,7 million cubic metres per day (around 14 bcma) To India: 38,7 million cubic metres per day (around 14 bcma) To Afghanistan: 14,2 cubic metres per day (around 5 bcma)	1735 km / \$10-12,5 billion	70% indexation to Brent price. Unofficial sources report the price level at \$10/mmbtu for India	Gas Pipeline Framework Agreement, 2010 Possible start of construction in 2015

Table 1. The TAPI Project Characteristics

Sources: *The Diplomat*, *The Gazette of Central Asia*, *The Hindu*, *Natural Gas Asia*

However, the feasibility of TAPI as an integrated project remains being far from reality. This article will group the project's hindering factors in three main sets and discuss them in the following order: security issues; geopolitical factors; and economic challenges.

HISTORICAL SKETCH

The pipeline project TAPI is a gas pipeline, which will link the regions of Central Asia and South Asia and transport up to 33 bcm of natural gas (Table 1). Turkmenistan is the sole supplier of gas for the pipeline; India and Pakistan will receive 42% of the total available capacity each, while the rest of the gas would be supplied to Afghanistan.

The idea of building a major pipeline project that could bring significant natural gas volumes from resource-rich Central Asia to populous and energy-hungry South Asian states is not a novelty. The first steps in the direction of gas supplies from Turkmenistan to Pakistan through Afghanistan goes back to the early 1990s, when cooperation with the Taliban to form a government of national unity with the northern tribes and stabilise the country was hailed by the Bush administration. One of the reasons was an effort to ensure the construction and operation of the pipeline of the US consortium Unocal against its direct Argentinian opponent Bidas.³ Negotiations broke up just before the 2001 terrorist attacks, but immediately resumed after the consequent US invasion. A "steering committee" of oil and gas ministers of Turkmenistan, Afghanistan and Pakistan was created already in 2002 and was promptly backed by the Asian Development Bank for technical assistance. India finally joined in the 10th meeting of the committee in 2008, and although the next decisive steps were delayed by intra-regional and international ramping tensions, with the recrudescence of the Afghan conflict and Pakistan-India mutual distrust,⁴ the representatives of the four countries signed the Gas Pipeline Framework Agreement and the related Intergovernmental Agreement

in Ashgabat (Turkmenistan) in December 2010.

Two problematic issues included transit fees, and the above-mentioned restrictive Turkmenistan law precluding the private ownership of land and discouraging potential investors such as Total or Exxon.⁵ The Agreement on transit fees was settled in May 2012 after some disputes in a four-party summit, where the respective memorandum of understanding was signed. Concerning the Turkmenistani regulation, the state company TurkmenGaz with the other partners' approval opted for "self-propulsion" and lead to the consortium refusing PSA rights concessions to foreign companies and aiming at receiving support from Russia and/or China.

In general, besides providing natural gas as such, it is undeniable that the TAPI project has an important strategic meaning for the countries involved.

It would be in fact about realising a much needed energy corridor between Central Asia and South Asia, and achieving a "natural partnership" by using the shortest possible route from the producer to the consumers. In these terms such an aim seems logical and beneficial to all parties involved. For the supply side (Turkmenistan), this would mean revenues and diversification of export routes, as well as competitive price for natural gas. For Afghanistan and Pakistan, the project means additional supplies as well as transit revenues.

Nevertheless, the majority of energy analysts tend to look at the project with undisguised skepticism. The project, and notably its physical functioning and profitability, are undermined by a number of blatant risks and unfavourable conditions.

SECURITY CONCERNS

The most pressing set of issues is physical security of the proposed project. These issues arise mainly in the transit states – Afghanistan and Pakistan.

The tendency observed in media is more or less deliberately avoiding covering news about Afghanistan after

³ Foster, J. (2010), *Afghanistan, the TAPI Pipeline, and Energy Geopolitics*, *Journal of Energy Security*, 23 March. Available at: http://ensec.org/index.php?option=com_content&view=article&id=233:afghanistan-the-tapi-pipeline-and-energy-geopolitics&catid=103:energysecurityissuecontent&Itemid=358 [Accessed: 02 May 2015]

⁴ *Ibid.*

⁵ Tanchum, M. (2015), *A Breakthrough on the TAPI pipeline?*

the declared assassination of Al-Qaeda's leader Bin Laden and the start of the gradual withdrawal of NATO and US troops from the country. This might give the impression that the security situation in the country has substantially improved. The reality seems to be somewhat worse than generally depicted. President Obama received in Washington his new Afghan counterpart last March, Ashfar Ghani and amidst abundant praises and compliments, openly acknowledged that "Afghanistan is still a dangerous place", and local troops are still unable to maintain law and order in the country without foreign military assistance. In the same occasion, several former senior officials in an open letter described the environment in the Central Asian republic as a "stalemate" and remarked that the political and economic situation is fragile. UN Secretary General, Mr. Ban Ki Moon (quoted in the work of Natasha Underhill) warned that at present conditions the risk for the situation in the country to become irreversible still exists, especially as a result of weak government legitimacy and controversial elections. After a year it is probably still too early to assess President Ghani's ruling performance. Stratfor's analysis of September 2014 also envisioned a mounting risk after the complete withdrawal of US troops, promised by President Obama within the terms of its office. Stressing the fact that "political forces are still far from reaching a durable power-sharing arrangement",⁶ it explains that, in brief, a divided pro-Western front is likely to be particularly vulnerable to the Afghan Taliban.

The latter extremist group, moreover, announced that this year's "spring operations" would begin on April 24, targeting what they called "the stooge regime" of Kabul, together with the "foreign occupiers", that is, US troops. It does not come as a surprise therefore, that rumours about an imminent start of trilateral peace talks between the US, Afghanistan and Afghan Taliban in Doha, incidentally promptly denied by official sources, proved wrong, and such a meeting, to this day, has not taken place and it is not likely to take place in the foreseeable future.⁷ Overall, more than a quick and mediated resolution,

the premises seem to suggest that tensions and clashes will persist in the medium to long term. In 2012, Pakistani press claimed that "the Afghan Taliban have assured that they would not sabotage the project," and used this as the main argument to assert that the problem of transit was probably going to be solved soon.⁸ The main issue is whether it is wise to look at the Taliban as a rational actor. The movement is based on extremist religious values and has been perpetrating continuous acts of violence in the country and several major terrorist attacks abroad. It can be easily deduced that religious values for the group are more important than political and economic profitability. A situation where the government, which had previously agreed upon the non-sabotage, changes its political orientation as a result of elections or different external stimuli to a tough pro-Western and anti-Taliban stance, is not a remote possibility. Will the Taliban respect the agreement simply because *pacta sunt servanda*?

Even regarding the Taliban as a rational actor, as the US strategy shifts toward to more pressing priorities (Ukraine, ISIS), they retain their motives to conduct war against Kabul and try to profit from the imminent departure of well-trained foreign troops.

There is a possibility of deploying troops to defend the construction operations and the functioning of the pipeline that would run through very dangerous regions (such as Kandahar and Herat). Military presence will increase costs and cause more insecurity, being likely to motivate terrorist attacks. Infrastructure is seen as a source of legitimacy for the central government and thus is a natural target for the terrorist attacks.

Last but not least, there is lack of evidence that the area selected for the project has been cleared of land mines.⁹

There are also security problems on the territory of Pakistan. The pipeline is planned through secessionist province of Baluchistan, which presents a heavy security threat.

6 Stratfor (2014), *Afghan Power-Sharing Deal Is Only a Temporary Fix*. Available at: <https://www.stratfor.com/sample/geopolitical-diary/afghan-power-sharing-deal-only-temporary-fix> [Accessed: 02 May 2015]

7 Panda A. (2015), *Who's Negotiating with the Taliban Anyway? The Diplomat*, 20 February. Available at: <http://thediplomat.com/2015/02/whos-negotiating-with-the-taliban-anyway/> [Accessed: 02 May 2015]

8 Bhutta Z. (2013), *TAPI project: Turkmenistan Offers Global Companies Role in Gas Export*. *The Express Tribune*, 10 September. Available at: <http://tribune.com.pk/story/602022/tapi-project-turkmenistan-offers-global-companies-role-in-gas-export/> [Accessed: 02 May 2015]

9 Foster J. (2010), *Afghanistan, the TAPI Pipeline, and Energy Geopolitics*.

Quite obviously, the Baloch independentism organisations have stressed that any project involving transit in the area has to be agreed with a “legitimate” representative, in this case, the London-based leader Hyrbyair Marri. The risk of sabotage, therefore could be very high. Moreover, the Baloch independentists would gain significant leverage over Islamabad’s government from TAPI. Meanwhile, India would suffer heavily any provoked disruption.

Overall, the risks afflicting the physical functioning of the project are very high, if not to say unprecedented in international experience and, additionally, no significant improvement is foreseeable.

GEOPOLITICAL CONTEXT

Security concerns – ultimately safety of transit through Afghanistan and Pakistan – would discourage most of foreign companies from entering the project. So why are the parties willing and determined to take the risk of long-term unreliable supply?

The answer can be found in the fact that a long-term project, especially when it deals with the shared use of a key resource like gas, as in case of TAPI, means that a long-term geopolitical game is at stake. Central Asia has a strategic location and all actors – especially Turkmenistan, Pakistan and India – have strong geopolitical interest in connection with the implementation of the pipeline. In particular, the two traditional geopolitical enemies in the area, Pakistan and India, see the pipeline as a way of building a relation of interdependence with Afghanistan while sharing the risk of such an attempt. Both India and Pakistan are looking at opportunities to enhance their status in the region. Both countries have regarded Afghanistan as a strategic ‘asset’, mainly because of its geographical position.¹⁰

The US has been strongly backing the project since the break-up of the Soviet Union in 1991.¹¹ At the same time, there are hopes that the pipeline will help to promote

better relations with the countries involved in it.¹² The ultimate aim is consolidating a pro-US “curtain” in the area, while simultaneously breaking China’s monopsony in Turkmenistan’s upstream and the preferential relationship between the two.

The TAPI pipeline in virtue of its long-term nature can serve as a basis to build independent¹³ relationships with other actors. According to Nye and Keohane’s interdependence theory presented in their book “Power and Interdependence” a long lasting interdependence relationship can easily become asymmetric under the pressure of internal or external factors. Asymmetries in this case should be regarded as a source of power.

Asymmetries that may emerge in a context of traditionally very tense international relations can be used as weapons. Natural gas, particularly if used in power generation, is very suitable for damaging purposes and/or retaliation. Therefore, the risk of a conflict escalation out of a dispute should be taken into account, especially in the light of the nuclear status of India and Pakistan.

At the macro level, the pipeline also could contribute in deteriorating China-US relations, due to a probable reinforcing “encirclement complex” of the former. This is even more likely to occur in the wake of the clear interest for Central Asian resources demonstrated by China. China, in brief, will try to counter the open support by the US and their aim to favour Turkmenistan’s differentiation away from its now de facto unique customer.

Overall, the project is entangled with a thick network of multi-level geopolitical interests. India and Pakistan tend to overestimate the potential benefit of gas trading for their regional aims over the risk of becoming vulnerable to an unreliable partner. There is also a potential of China-US contradictions in the region.

10 Shams S. (2014), *India and Pakistan ‘Battle’ for Afghanistan*. Available at: <http://www.dw.de/india-and-pakistan-battle-for-afghanistan/a-18073889> [Accessed: 02 May 2015]

11 Foster J. (2010), *Afghanistan, the TAPI Pipeline, and Energy Geopolitics*.

12 Bahar Khan A. (2014), *TAPI Pipeline: A Nexus for Peace and Stability*. [Available at: <http://www.pakistantoday.com.pk/2014/08/02/comment/tapi-pipeline-a-nexus-for-peace-and-stability/>] [Accessed: 02 May 2015]

13 Keohane R., Nye J. (2001), *Power and Interdependence*, NY: Longman. Pp. 10-11.

ECONOMICS OF THE PROJECT

The most critical aspect for investors is the evaluation of the South Yolotan field in Turkmenistan to serve as the main source of gas for TAPI. Most recent estimates provided by the independent British auditor Gaffney, Cline & Associates reports the possibility of recovering up to 21,2 trillion cubic meters of gas from the field, making it the second-largest reservoir of gas in the world after the Iranian/Qatari South Pars.¹⁴ In spite of the fact that these estimates have been heavily criticised, the field could sustain the production of volumes contracted by China (80 bcm/year in total by 2020, but only 25-30 bcm/year from South Yolotan through the D line of the Central Asia-China pipeline).¹⁵ The problem is lying in the closeness of the onshore upstream sector of Turkmenistan. Turkmenistan does not permit foreign companies oil and gas exploration and development on onshore fields, where the only notable exception to the rule is the Chinese CNPC.

In 2013, a proposal was made to European and American IOCs to develop offshore projects and swap the gas produced at the South Yolotan feeding the TAPI. This proposal is not likely to come in effect due to the higher costs and risks of offshore exploration.¹⁶ Moreover, at the moment, only CNPC would have the technical know-how and the economic capability to carry out the upstream investment needed for a project which is evidently against Chinese national interest.

Without being in control of the upstream, foreign companies are very unlikely to invest on the realisation of the pipeline itself and a significant inflow of FDI is necessary for its feasibility. And here comes the main financial issue; the cost of the project was initially estimated in 2008 at about \$7,6 billion, but in 2012 the cost allegedly already rose to around \$12 billion.¹⁷

In the absence of international investors, the remaining options for the proposing states are to provide all the necessary funding themselves, or to rely on the assistance of the Asian Development Bank. Both options are questionable. The cost of the project, according to the 2008 estimate, goes far beyond the Asian Development Bank's financing capabilities,¹⁸ while bearing significant risks.

There are two main alternatives to the TAPI pipeline: the "Peace Pipeline" between Iran and India through Pakistan, and the Oman-India offshore pipeline.

The "Peace Pipeline" from Iran's South Pars field to India through Pakistan was considered the most promising option before sanctions against Iran were introduced in 2012. From this point of view, the TAPI has to be seen as an "offshoot of sanctions". The cost was estimated around the same amount required by TAPI (\$7,5 billion). China has already declared it will finance a downscaled project of an Iran-Pakistan gas pipeline,¹⁹ which will not have any transit issue through Afghanistan (although Baluchistan will remain as a transit issue) and is very unlikely to receive a veto by the US amid threats of sanctions against Pakistan,²⁰ thanks to the Chinese support. India already withdrew in the preliminary phase of the Peace Pipeline for security and pricing concerns.

India could instead take advantage of the gradual return of Iran in the market to contract sufficient volumes to fill an Iran-Oman-India pipeline, whose offshore section would cost around \$4-5 billion.²¹ In this case, the transit risks seem to be lower than in case of Pakistan involvement, and geopolitical concerns would be considerably reduced.

14 Henni A. (2014), *Gas for Cash: The Future of Turkmenistan*. Available at: <http://www.spe.org/news/article/Turkmenistan-Gas-for-Cash> [Accessed: 02 May 2015]

15 CNPC (2015), *Flow of Natural Gas from Central Asia*. Available at: <http://www.cnpc.com.cn/en/FlowofnaturalgasfromCentralAsia/FlowofnaturalgasfromCentralAsia2.shtml> [Accessed: 02 May 2015]

16 Bhutta Z. (2013), *TAPI project: Turkmenistan Offers Global Companies Role in Gas Export*.

17 Tanchum, M. (2015), *A Breakthrough on the TAPI pipeline?*

18 *Asian Development Bank (2014), Budget of the Asian Development Bank for 2015*. Available at: <http://www.adb.org/sites/default/files/institutional-document/151406/r171-14.pdf> [Accessed: 02 May 2015]

19 RT (2015), *China to Build \$2bn Iran-Pakistan Pipeline*. Available at: <http://rt.com/business/248313-china-iran-pakistan-gas-pipeline/> [Accessed: 02 May 2015]

20 Stearns S. (2013), *US Considers Sanctions Against Pakistan for Iran Pipeline*. Available at: <http://www.voanews.com/content/us-considers-sanctions-against-pakistan-for-iran-pipeline/1633012.html> [Accessed: 02 May 2015]

21 Panda A. (2014), *India, Iran and Oman Open Talks On Deep Sea Gas Pipeline, The Diplomat*. Available at: <http://thediplomat.com/2014/03/india-iran-and-oman-open-talks-on-deep-sea-gas-pipeline/> [Accessed: 02 May 2015]

The cost of building the two alternatives to TAPI, according to the latest estimates, would surpass the TAPI cost by approximately \$1 billion, which, at the conditions described, should be seen as a very fair security premium that is worth paying.

The only loser in such a picture would be Turkmenistan. Ashgabat would see its diversification dreams vanish. However, the loss might be temporary: Iran, despite its huge domestic gas reserves, is also one of the biggest consumers in the world and has very poor infrastructure, especially in the North-Eastern part of the country. It is not therefore surprising that it declared its availability for transiting Turkmen gas for further export, since it could benefit itself from the FDI inflow to support the new trans-border infrastructure and gasify rural areas in the region.

All this will clearly depend on the demand trends of India and Pakistan, but due to the cost of alternative LNG supply, the scenario is not as remote as it may appear at a first glance.

CONCLUSIONS

Looking at the whole picture, trans-regional projects between Central and South Asia are undoubtedly very important for the development of both regions. In principle, taking into account only economic and geographic factors, the transit through Afghanistan is probably the optimal solution to attain this target. Nevertheless, having examined mounting security problems in Afghanistan, long-term geopolitical risks and the economic aspects of the TAPI pipelines and possible alternatives, what can be concluded is that the TAPI pipeline project faces a number of challenges that makes it very unattractive for actual implementation. If actors involved behave rationally, then they will not insert the TAPI into their energy strategy until the adverse conditions pointed out above desist. In the meantime, in the wake of the imminent revocation of Western sanctions on Iran, absolute priority should be given to the viable alternatives centred on Iran.

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RUSSIA-CHINA GAS DEAL: A WIN/WIN

Jerry Byers

Abstract

There is a plethora of debate about the winners and losers in the 2014 finalisation of the Russia-China gas deal, a long-term contract for supply of up to 38 bcm of natural gas and construction of associated infrastructure. Most of the rhetoric focuses on the seemingly unavoidable trade-off, in which Russia has been forced to accept a less than advantageous deal with China and has sacrificed its interests out of desperation brought on by Western sanctions, low oil and gas prices, and a slowing economy. However, the developments that are now underway are neither an “unavoidable trade-off” or a “breakthrough”. It is simply a matter of ideal timing for both parties to complete a deal that has been in the works for many years and can satisfy the needs for both parties in their changing energy needs.

Key words: Russia, China, natural gas, pipeline, gas pricing



Figure 1. Power of Siberia and the Eastern Route of Russian gas supplies to China
Source: Gazprom

The Power of Siberia – a pipeline designed to bring Russian gas to China – was approved by the Russian President’s decree of May 2015.¹ The pipeline is part of the Russia-China gas deal, which took place a year

earlier.² There is a plethora of debate about the winners and losers in the finalisation of this deal: most of the rhetoric focuses on the seemingly unavoidable

1 Liesowska A. (2015), *Putin Signs Decree to Confirm Power of Siberia Project*, *Siberian Times*, 4 May. Available at: <http://siberiantimes.com/business/siberianexport/news/n0204-putin-signs-decree-to-confirm-power-of-siberia-project/> [Accessed: 14 August 2015]

2 OGI (2014), *Gazprom, CNPC Sign 30-year Natural Gas Supply Contract*, *Oil and Gas Journal*, 4 May. <http://www.ogi.com/articles/2014/05/gazprom-cnpc-sign-30-year-natural-gas-supply-contract.html> [Accessed: 14 August 2015]; Gazprom (2014), *Russia and China Sign Framework Agreement on Gas Supplies via Western Route*, 9 November. Available at: <http://www.gazprom.com/press/news/2014/november/article205898/> [Accessed: 14 August 2015]

trade-off, in which Russia has been forced to accept a less than advantageous deal with China and has sacrificed its interests out of desperation brought on by Western sanctions, low oil and gas prices, and a slowing economy.

However, the two pipeline gas deals that are now underway to ship over 60 billion cubic meters (bcm) of gas annually from both West Siberian and new East Siberian fields (Figure 1) is neither an “unavoidable trade-off” or a “break-through”. It is simply a matter of ideal timing for both parties to complete a deal that has been in the works for many years and can satisfy the needs for both parties in their changing energy needs.

CHINA: WHAT KIND OF PARTNER?

Let us look at the deal in isolation by eliminating the background of geo-political intrigues with Western sanctions being applied to Russia including capital and technology transfers. From this perspective, it is easy to see why this agreement is a natural fit. China recently surpassed the US as the largest economy in the world (GDP considering PPP). China faces growing energy needs, recently agreed to lower emissions due to urban pollution and other considerations, is seeking to lower its dependence on coal,

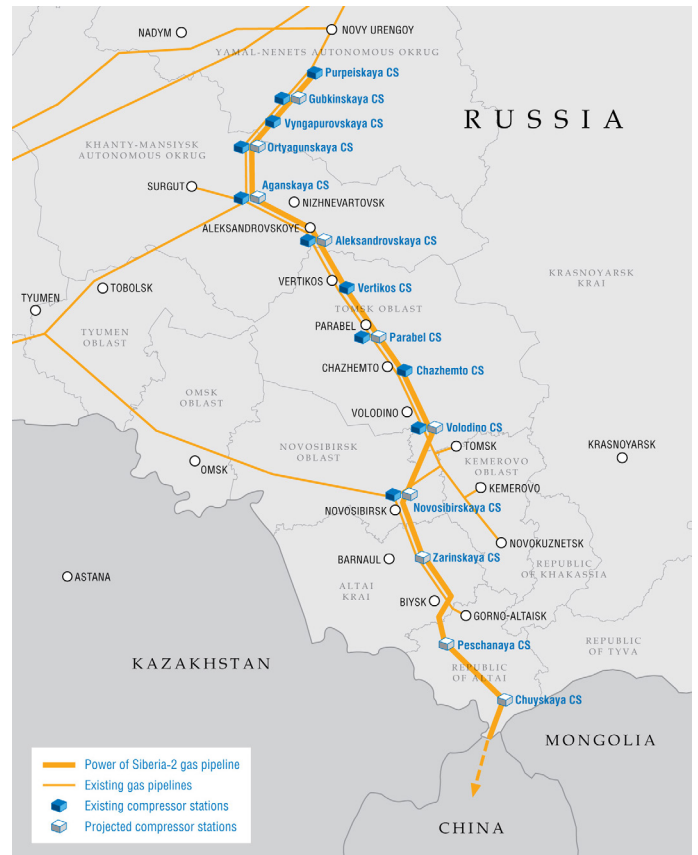


Figure 2. Altai pipeline and the Western Route of Russian gas supplies to China Source: Gazprom

and, as illustrated in Figure 3, has likely maxed out its ability to take additional quantities of Turkmen gas (currently accounting for over half of China’s gas imports).

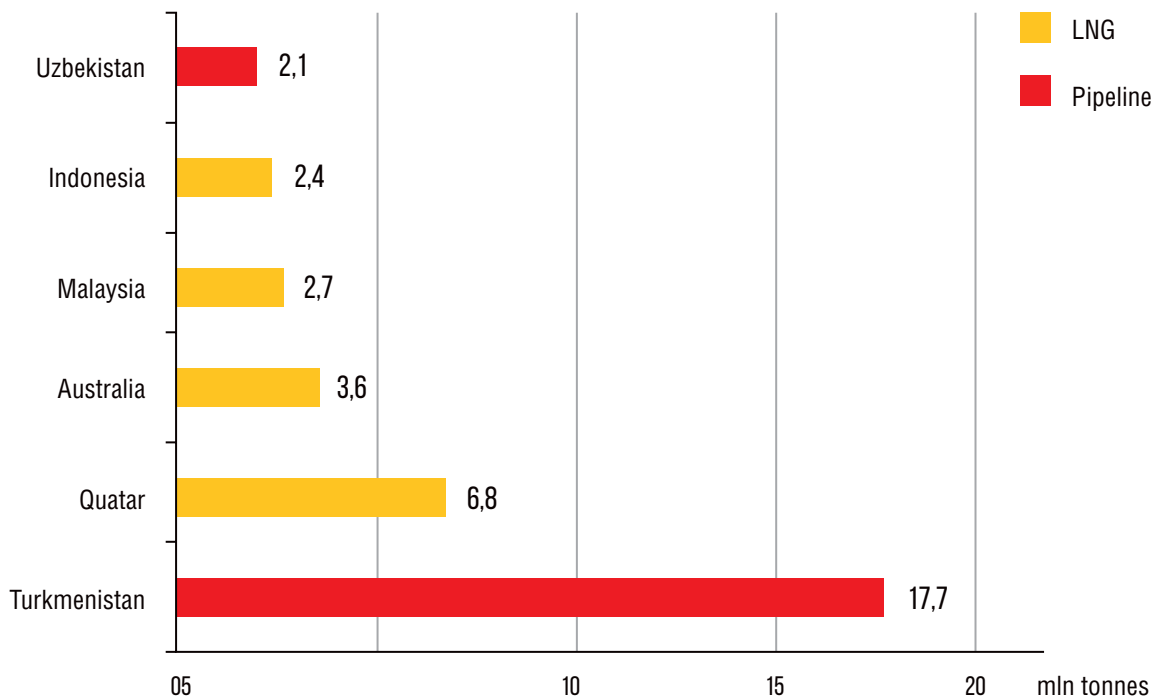


Figure 3. Sources of Natural Gas Imports to China in 2013 Source: China General Administration of Customs

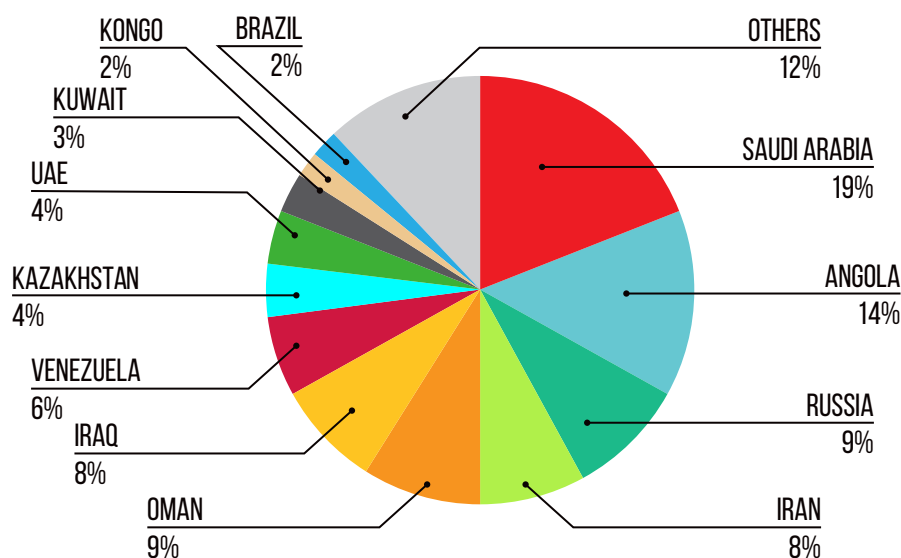


Figure 4. China's Crude Oil Imports by Source, 2013
Source: FACTS Global Energy, Global Trade Information Services

China's energy import strategy (Figure 4) has been consistent in its desire to obtain a diversity of supply with a wide arrange of supply contracts from several areas of the world and has invested heavily in upstream projects including East Africa. The natural move for China would be to secure lower cost pipeline gas from additional sources besides Turkmenistan, while Russia and Iran (both under sanctions) have the largest gas reserves in the world.

This situation alone seems to be a "no brainer", but there is more. The current prices for oil and gas gave China bargaining strength in completing a deal, because their long-term goals are not profit-based, like many IOC's of the West. Instead, their oil and gas companies are tasked with securing energy for the future of Chinese growth and are poised to invest most when the pay-off is greatest. The current period, when prices are near their lowest levels in several years, is exactly the kind of context needed for reaching these objectives.³

Additionally, the new gas deals with Russia secure a few other Chinese objectives besides diversification of supply, lower emissions, and favourable prices. The gas deal coincides with China's launching the Asia Infrastructure Invest-

ment Bank (AIIB) to rival the World Bank and IMF, which are largely controlled by the US, Japan, and Europe.⁴ Russia has become one of the founding members of the AIIB and recently finished agreements with China and the other BRICS members to contribute \$18 billion to the \$100 billion BRICS reserve fund, which provides alternative funding for Brazil, Russia, India, China, and South Africa.⁵

Furthermore, the sale of military hardware and technology benefits China and it has recently agreed to purchase a new Russian anti-aircraft system for several billion dollars. Joint Russian-China space programmes in the near and distant future are also in discussion. Coincidence? It seems that the gas deal is just part of the strengthening of ties between the two neighbors and the further development of trade.

THE RUSSIAN PERSPECTIVE

For Russia's part, the pay-offs from the gas deal are plentiful and far outweigh the negative aspects of the deal. Of course, Russia also benefits from the aforementioned participation in the AIIB and BRICS reserve fund, as it provides additional capital in Russian development projects.

3 O'Sullivan M. (2014), *New China-Russia Gas Pact Is No Big Deal*, *BloombergView.com*, 14 November. Available at: <http://www.bloombergview.com/articles/2014-11-14/new-chinarussia-gas-pact-is-no-big-deal> [Accessed: 14 August 2015]

4 RT (2015), *Russia Officially Joins \$50bn China-led Infrastructure Bank*, *Russia Today*, 14 April. <http://www.rt.com/business/249481-russia-aiib-china-founder/> [Accessed: 14 August 2015]

5 Gillespie P. (2015), *Russia and China Have Had Enough of Western Banking*, *CNNMoney*, 4 May. Available at: <http://money.cnn.com/2015/05/04/news/economy/russia-approves-brics-reserve-bank-imf/> [Accessed: 14 August 2015]

First, the two gas pipeline projects will provide Russia with additional security of demand as their current customers, namely the EU, diversify away from Russian gas and lower their consumption. This also includes the guaranteed return on investment necessary to undertake the pipeline projects, as the deal will last 30 years. While the price is not public, there is likely a lower margin than Gazprom would ideally like, but it is just as unlikely that it will be unprofitable.⁶ Therefore, the sales will increase revenues for Gazprom and the Russian Federation and will do so into the future.

Next, the projects will be completed with the much-needed financing from Chinese banks, which was a factor that had been delaying the finalisation for many years. In fact, the recent lowering of deposit thresholds of foreign banks by Russia for investment purposes is helping to finance other upstream projects in Russia. Again, coincidence?

Also, the pipeline projects will assist in the development of the Russian Far East and its gasification, which has long been a goal of the Russian government. The project will bring jobs, improve the infrastructure of cities such as Irkutsk and Khabarovsk, and will stimulate the economies of other Russian cities such as Yakutsk which will be tasked with supplying vast amounts of reinforced concrete.

Lastly, the deal is one of many that are improving Russian-Sino relations at every level with trade and banking forming the foundation. From a security perspective, this is in Russia's best interest, as it strengthens a bridge to the ever-emerging markets of East Asia as a whole, and it plants the seeds for future, and possibly more profitable, energy deals with China. Figure 5 shows the already strong trading ties between Russia and China around 90 Billion USD in 2013.

A WIN/WIN

It is easy to look at some of the areas in which the gas deal with China undermines some of Russia's strategies and forces them to be more accommodating in the final agreements. The timing of the deal when prices are low and the additional access given to Chinese investors to Russian resources is regrettable from Russian perspective, but for the Chinese side there are some negatives as well. For example, as China increases its import dependency and shifts its domestic energy path dependency to one that is more reliant on gas and oil, it will be forced to reciprocate these accommodations in the future and perhaps the next deal will be timed to favour the Russian side.⁷ The most important thing to consider is that trade is improving, growth is being created, and producers and consumers are fulfilling their needs. Energy trade agreements, such as the 2014 agreements between Russia and China, need not be contextualised as "breakthroughs" or "unavoidable trade-offs", because the agreements themselves are the goals to which producing and consuming nations aspire to in the first place.

At the end of the day, this deal benefits both parties and helps each maintain their sovereignty away from the dominant Western banking and energy institutions.

⁷ Mazneva E. (2015), *Gazprom Bid for Second China Deal Seen Challenged by Crude Slump*, *Bloomberg.com*, 8 April. Available at: <http://www.bloomberg.com/news/articles/2015-04-07/gazprom-bid-for-second-china-deal-seen-challenged-by-crude-slump> [Accessed: 14 August 2015]

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⁶ O'Sullivan M. (2014), *New China-Russia Gas Pact Is No Big Deal*.

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