

India and The Matter of Importing LNG through Gas Pipelines: The Real Value of Economic Growth

Paper Submission: 16/11/2020, Date of Acceptance: 28/11/2020, Date of Publication: 29/11/2020



Thakor Jugaji Babu ji
 Student,
 Dept. of Economics,
 Hemchandracharya North Gujarat
 University,
 Patan, Gujarat, India

Abstract

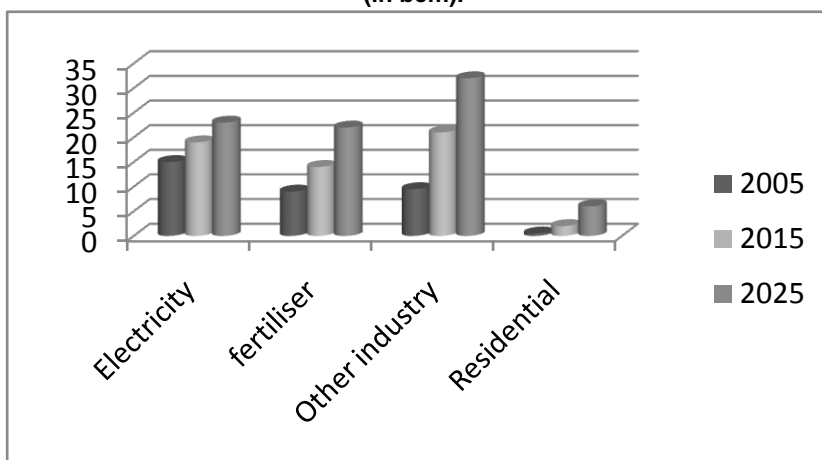
By 2030, it is estimated that over 590 million people will live in Indian cities, nearly twice the amount of today's population of the United States of America. Although the future looks bright for India and its citizens, a larger and growing population brings with itself many difficulties. One of those difficulties is of course the need for more resources to sustain the population and India's exceptionally fast economic growth. Natural gas is key to this issue and for India, the energy needed to fuel its economic and population growth simply cannot be provided by indigenous sources. This research paper is an attempt to understand the conflict on the basis of the economic benefits of the various proposed LNG pipeline projects with various countries like Iran, Turkmenistan and Russia as against the pressure by the international community to work or not work with various countries and the diplomacy involved. This research paper also attempts to analyse the various economic benefits and viability of each of these proposed pipeline projects.

Keywords: Liquefied Natural Gas (LNG), Economic Growth, Diplomacy.

Introduction

Liquefied Natural Gas (LNG) is the upcoming fuel because it is environment friendly (emissions are 30% less than Diesel). Further, a historically high spread between crude oil and natural gas offers an opportunity to make the capital investment to switch to LNG and amortize costs over an acceptable period of time. This leads to a lot of economic benefits. LNG shows a relative price stability over other similar fuels and has varied uses. It is owing to this that the demand for Natural Gas in India is increasing manifold. Figure 1 shows the increasing consumption trends of LNG in India 1. As a result of this, sourcing LNG from cost effective means has become a necessity. India generally imports this LNG from its various trade partners, primarily Qatar, through the way of sea ports which is a costly affair.

Figure 1, Consumption trends of LNG in India across various sectors (in bcm).



Then came the idea of importing the same through various country partners. For this, various plans were proposed. India was invited to join the Iran-Pakistan gas pipeline project and also the Turkmenistan-Afghanistan-Pakistan LNG gas pipeline project. Though the above two were the two main prospects, there were other plans to construct pipelines with Russia and Oman. On the face of it, the project with Iran seems more viable than the one with Turkmenistan but the construction on the Turkmenistan project has already started while India, for the time being, has pulled out of the Iran project. This project attempts to undertake a cost benefit analysis of the same. The project with Turkmenistan was entered into by international pressure and the impact and co relation of the same with economics will be analysed.

Undertaking this study is of relevance to India because LNG as an alternative fuel is coming up rapidly and its demand is increasing manifold. If such studies as to the analysis of various options to import the same are not undertaken, it might create a huge disparity between the supply and demand of the same in future.

This paper will initially, after the description of the issue will attempt first, an understanding of the pure economic concepts involved and how they apply to the two pipelines by using various tools such as a cost-benefit analysis, pare to optimality etc. will then venture into the international relations aspect and then will discuss its impact on the economics portion of it and will see the deviance from the pure economic concept propounded in the previous section.

Broad Theoretical Framework

1. The basis of the study being undertaken will be the analysis of two projects, the Iran-Pakistan-India (IPI) pipeline and the Turkmenistan-Afghanistan-Pakistan-India (TAPI) and after such analysis, its future applications will be seen.
2. The Iran-Pakistan gas pipeline project is a pipeline project that originates from the South Pars oilfield in Iran and as per current proposals, goes to Multan in Pakistan but initially was proposed to come all the way to New Delhi in India. The proposed pipeline would have an annual capacity of carrying 40 billion cubic meters of LNG a year. This coupled with the fact that the resources of Iran are proven to a large extent as it is known to have around 15% of the total gas reserves of the world would've made it a very viable option for India to invest in and fulfill its needs.² It is estimated that the construction of the pipeline would require around \$7.5 billion.
3. The TAPI pipeline project has already started construction and has the support of USA and the reports of its viability are being undertaken by the Asian development bank. It is to originate in Galkynysh gas field in Turkmenistan and will travel through various locations such as Herat (Afghanistan), Kandahar (Afghanistan), Quetta (Pakistan), Multan (Pakistan) and will terminate in Fazilka, Punjab (India). The pipeline will have an

estimated cost of around \$10 billion and has the support of USA. The maximum carrying capacity of the pipeline is estimated at 33 billion cubic meters per annum.³ Further, the resources and the quantum of gas with Turkmenistan are not yet proven as a lot of it is undiscovered.

Analysis of the two projects with the tools of Economic Analysis of Law

We will primarily focus on three tools of economic analysis of law to analyse the economic viability of the two pipeline projects. We will primarily analyse the impact of importing LNG through gas pipelines on the production possibility curve of India

1. Assuming two variables. After that, we will test the viability of the two projects from the principles of cost-benefit analysis and the concept of Pareto efficiency.
2. To analyze the impact of importing LNG through gas pipelines, we will first assume that the economy produces two commodities that are electricity (taken on Y-Axis) and fertilizers (taken on X-Axis) as shown in figure 2. When LNG is imported through pipelines, this as such leads to the increment of resources in the country for the purpose of production. This leads to a rightward shift in the production possibility curve for both fertilizers and electricity. Thus, it increases economic welfare.

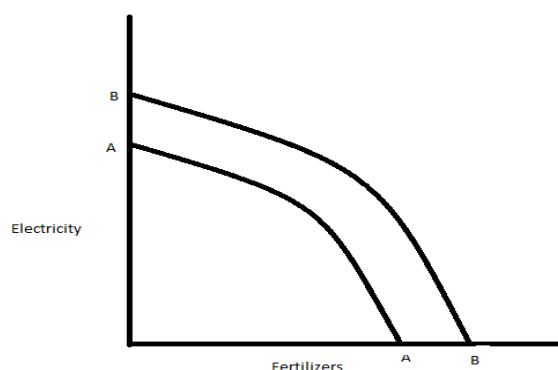


Figure 2 Production Possibility Curve (Assuming only Electricity and Fertilizers are produced)

3. Now we shall undertake a cost benefit analysis of the two pipeline projects and see where they appear on a cost benefit curve and which pipeline is more viable and which one is not. Figure 3 shows the two sets of curves. The point which is most viable is where the gap between the benefit and cost curves is the highest, or in other words, where the marginal benefit curve and the marginal cost curves intersect. Thus, as per figure three, B should be the most beneficial point. We will try to show now that B is the point when IPI pipeline is chosen over the TAPI pipeline and A is the point when TAPI pipeline is chosen over the IPI pipeline.

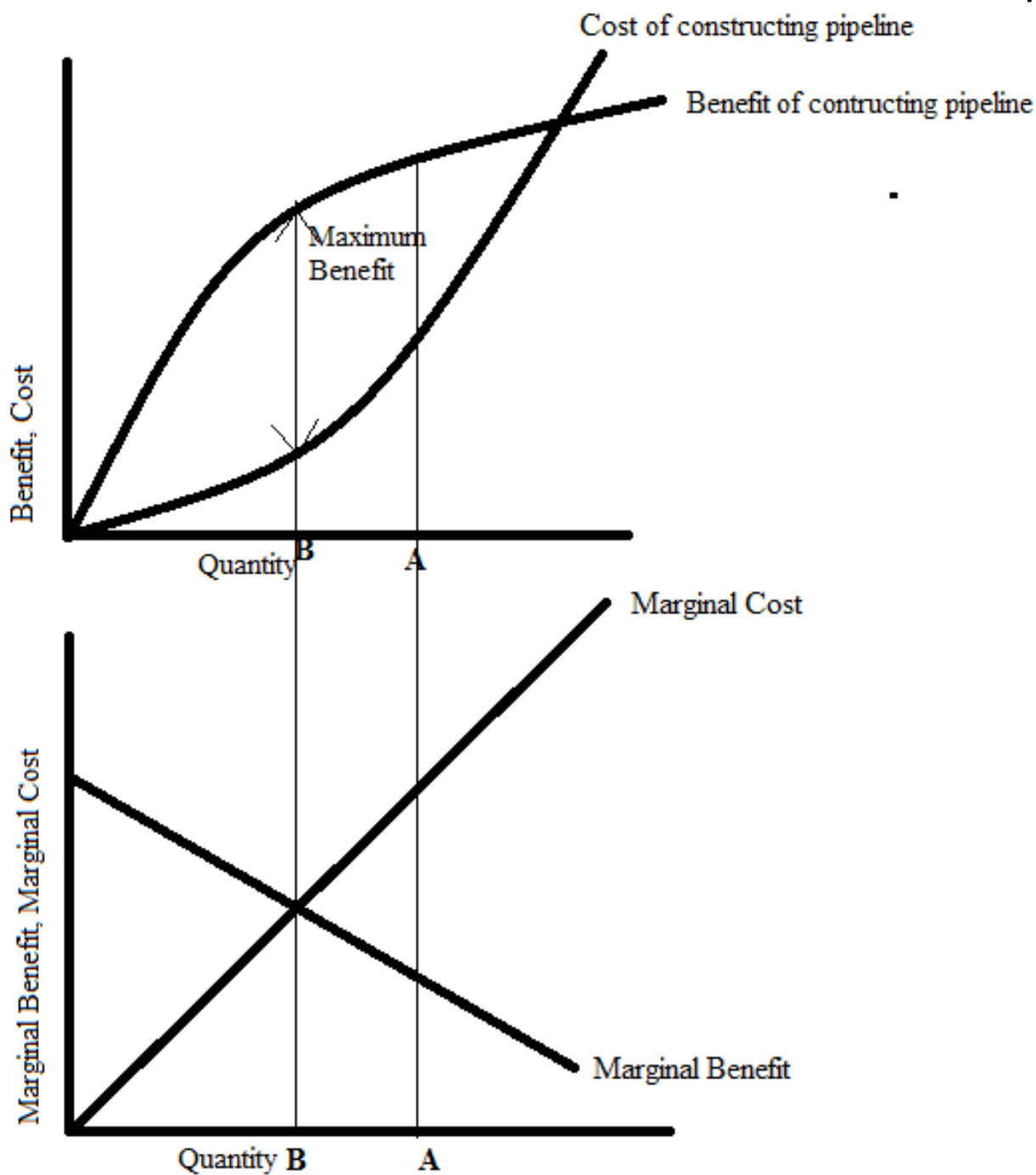


Figure 3 Cost benefit analysis curves

The IPI pipeline has certain benefits over TAPI and further has lesser costs which will show that economically, the IPI pipeline is much more favorable. These factors are:

1. On the face of it, the cost of the IPI pipeline is lesser as it is estimated to cost around \$7.5 billion while the TAPI is estimated to cost around \$10 billion.⁴
2. The oil resources of Iran are proven to a large extent and it is expected that the flow of LNG, hence, would be continuous and uninterrupted and hence is a long term viable option.
3. The carrying capacity of IPI is 40 billion cubic meters while that of TAPI is 33 billion cubic meters which indicates, that even though the initial import quantity might be less, there is a greater scope of importing more LNG in the future through IPI than TAPI.
4. It is expected that the cost of gas delivered through IPI will be US\$11 per million British thermal unit (MMBTU) as compared to US\$13 per MMBTU of TAPI and US\$18 per MMBTU for imported LNG.⁵

Apart from the few inherent benefits of the IPI over the TAPI pipeline, TAPI suffers from a few inherent defects which are:

1. The proposed route of the pipeline will cut across highly sensitive security areas in the portion of Afghanistan through the provinces of Helmand and Kandahar which are traditionally known to be Taliban strongholds.
2. Secondly, there is substantially no one who is willing to finance the project so that it can go ahead because the companies and the private sectors do not want to get involved and actually cant because the policies of Turkmenistan do not allow companies to invest in these projects.
3. Thus, we see that economically, IPI is more favorable over TAPI. Based on figure 3, we see that for TAPI, the marginal benefits are far outweighed by the marginal costs in terms of the risks involved with the project and the high costs.

Now, we shall see how the two pipelines do when we talk about Pareto optimality. Pareto optimality may be defined as a position which is reached at which point, it is not possible to make someone better off without making someone worse off. A Pareto improvement on the other hand is a situation where someone is made better off but scope for further improvement is there. An analysis of the given case studies of IPI and TAPI show, through figure 4 building both IPI and TAPI would be a Pareto improvement for both, the household sector and the electricity production sector but IPI (Point C) would be a greater Pareto improvement than TAPI (Point B).

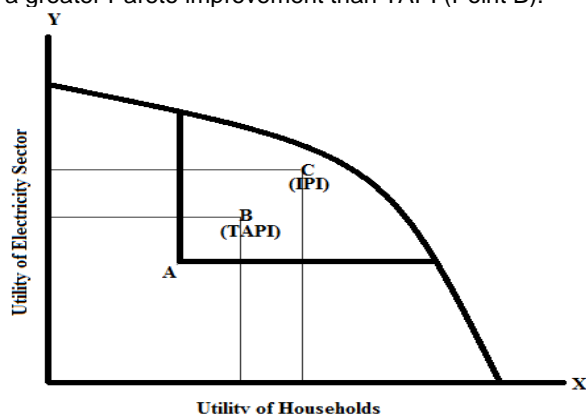


Figure 4 Pareto Optimality of IPI and TAPI pipelines.

Thus, through Cost-Benefit analysis and Pareto Optimality, we have adequately established that IPI is a more economically viable option.

The issue of Diplomacy and International Relations

The question at this point arises that even though IPI has clear benefits over TAPI, why has the construction and plan of IPI been put on hold and why has India withdrawn from the project for the time being and TAPI is already under construction. The answer lies in international relations. When the negotiations of IPI were under process, there was an immense amount of pressure by USA on Pakistan and India to not work with Iran. On 29 January 2013, US consul general Michael Dodman even threatened Pakistan with economic sanctions if it does not abandon the project.⁶ It is believed that India pulled out of the deal for the same reasons even though it was at the cost of immense economic benefits over the TAPI project. It must, therefore, be understood that international relations play a vital role and these considerations are vital for taking economic decisions at large.

Relevance of the Study

1. Undertaking this study is very relevant in the world at large while taking policy decisions as it indicates the various tools through which an economic analysis of the policy decision should be done and on the basis of that, while keeping in consideration, the other factors, a calculated decision should be taken which maximizes surplus and ensures generation of welfare of the people.
2. This study is particularly relevant in the Indian context of LNG as various other projects to import the same through various means are being considered. This is because as the trends show, which are given in figure 5, that the demand for LNG will continually increase in the future and there is a requirement to meet this demand with adequate supply. To generate this supply, there is a requirement to look for cost effective sources for the same which is attempted to be done by the study.

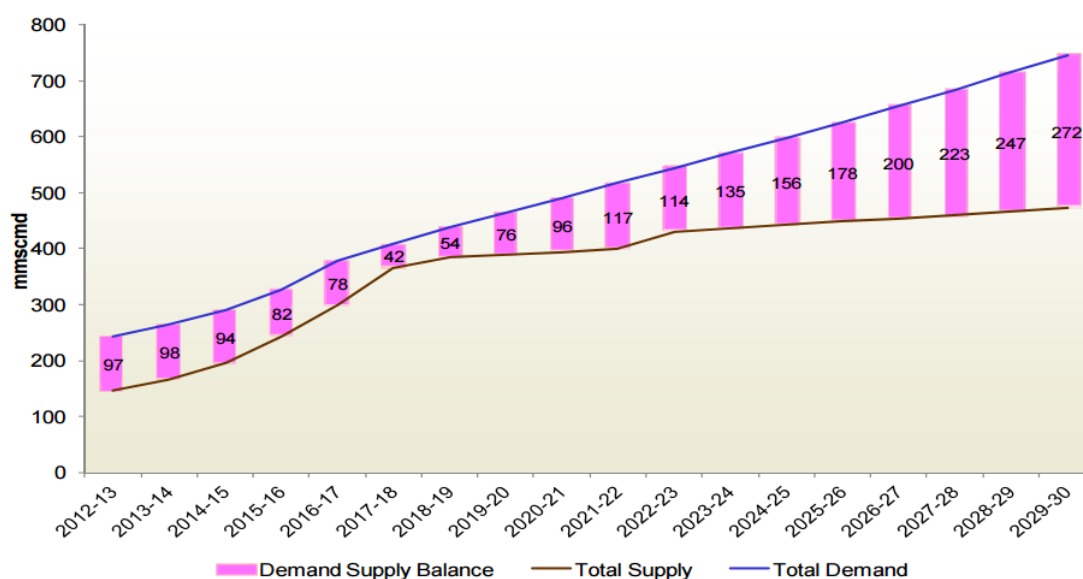


Figure 5 Demand and supply trends for Liquefied Natural Gas (LNG)

Suggestions

1. This paper attempts to suggest certain policy implications while considering the studies and the analysis made in the previous section.
2. Firstly, the IPI project, which has been discussed at length should be revived considering that fact that a major aspect of taking that deal off the table was the pressure from the US, which after the easement of sanctions in the previous year with Iran, now seems a possibility and is already an economically viable option.
3. Secondly, this study has far reaching impacts on policy decisions being taken on similar projects. One such project under consideration is the Russia-India gas pipeline to transport LNG directly from Siberia to India. This is expected to be a \$25 billion project⁷ and the viability studies of the same are being undertaken. Again, both economic and diplomatic considerations will be a part of the project.
4. A similar study is also being undertaken for a possible Oman-India gas pipeline. In the last few years, deep sea gas pipeline technology has matured. Since India has serious security concerns with regard to pipeline projects over land, a deep sea pipeline is probably the most promising option. The project intends to transport 8 tcf (trillion cubic feet) of natural gas to India over a period of 20 years. The pipeline is planned to be about 1,300 km long, laid at a depth of 3,400 meters below the seabed. It will connect the Middle East Compression Station near Oman with the receiving terminal near Gujarat. The estimated cost of this project is \$4-5 billion and can be executed in about five years.⁸
5. The most important implication as suggested by the project is that government must adequately weigh the economic benefits of a project along with considering international relations. If international relations are the sole driving factor in taking an economic policy decision, then it

might not be in the best interests of the nation at large.

Conclusion

The conclusion that can be drawn out of the study is that though international relations are a major aspect of taking and making policy decisions and rules, they must not be the sole consideration for the same. All the economic benefits and costs associated with all the alternatives available should be adequately evaluated and then a policy decision should be taken. This will generally be in the larger interest of the society. With reference to a specific conclusion as to the research undertaken on the two projects of TAPI and IPI. The government should reconsider the IPI pipeline project and should also look for further avenues with other trade partners like Russia and Oman to meet the increasing demand of Natural Gas.

References

1. Dr. A K Balyan, *Meeting Demand Challenged of LNG market in India*, GAS TECHNOLOGY INSTITUTE (Jun. 06 2013, 06:20 PM), http://www.gastechnology.org/Training/Documents/LNG17-proceedings/06_04-Dr-A-K-Balyan-Presentation.pdf
2. Xinhua News Agency, *IPI implementation nearing 'final stage'*, DOWNSTREAM TODAY (May 08, 2008, 12:00 PM), http://www.downstreamtoday.com/news/article.aspx?a_id=10718&AspxAutoDetectCookieSupport=1.
3. Micha'el Tanchum, *A Fillip for the TAPI Pipeline*, THE DIPLOMAT (Dec. 03, 2015, 02:30 PM), <http://thediplomat.com/2015/12/a-fillip-for-the-tapi-pipeline/>.
4. *Supra Note 2*.
5. Abdul Rasheed Azad, *IPI pipeline project: Pakistan to pay \$6/MMBTU more for gas price*, BUSINESS RECORDER (Apr 5, 2012, 10:30 AM), <http://www.brecorder.com/2012/04/05/51923/>
6. *US Warns Pakistan of sanctions over Iran gas pipeline deal*, THE NEWS (Jan. 29, 2013, 12:00

PM), <https://www.thenews.com.pk/archive/print/628224-us-warns-pakistan-of-sanctions-over-iran-gas-pipeline-deal>.

7. Press Trust of India, India, Russia to study building \$25 billion pipeline, *THE ECONOMIC TIMES*, (Oct. 16, 2016, 2:49 PM), <http://economictimes.indiatimes.com/industry/energy/oil-gas/india-russia-to-study-building-25-billion-pipeline/articleshow/54878729.cms>.
8. H.S. Ramakrishna, India Oman Gas Pipeline: A most promising option, *THE ECONOMIC TIMES*, (Nov. 19, 2014, 12:35 PM) <http://economictimes.indiatimes.com/industry/energy/oil-gas/oman-india-gas-pipeline-a-most-promising-option/articleshow/45201546.cms>

Articles

9. Abduljali Abdurasulov, Is Turkmenistan's gas pipelining a dream? (Accessed on Oct 01, 2020), <http://www.bbc.com/news/world-asia-32981469>.
10. Abdul Rasheed Azad, IPI pipeline project: Pakistan to pay \$6/MMBTU more for gas price, *BUSINESS RECORDER* (accessed on Oct 1, 2020), <http://www.brecorder.com/2012/04/05/51923/>.
11. H.S. Ramakrishna, India Oman Gas Pipeline: A most promising option, *THE ECONOMIC TIMES*, (accessed on Oct 1, 2020), <http://economictimes.indiatimes.com/industry/energy/oil-gas/oman-india-gas-pipeline-a-most-promising-option/articleshow/45201546.cms>.
12. Micha'el Tanchum, A Fillip for the TAPI Pipeline, *The Diplomat* (accessed on Oct 01, 2020), <http://thediplomat.com/2015/12/a-fillip-for-the-tapi-pipeline/>.

13. Press Trust of India, India, Russia to study building \$25 billion pipeline, *The Economic Times*, (accessed on Oct 01, 2020), <http://economictimes.indiatimes.com/industry/energy/oil-gas/india-russia-to-study-building-25-billion-pipeline/articleshow/54878729.cms>.
14. US Warns Pakistan of sanctions over Iran gas pipeline deal, *The News* (accessed on Oct 01, 2020), <https://www.thenews.com.pk/archive/print/628224-us-warns-pakistan-of-sanctions-over-iran-gas-pipeline-deal>.
15. Xinhua News Agency, IPI implementation nearing 'final stage', *Downstream Today* (accessed on Oct 01, 2020), http://www.downstreamtoday.com/news/article.aspx?a_id=10718&AspxAutoDetectCookieSupport=1.

Books

16. Nicholas Mercuro & Steven Medema, *Economics and the Law 68-75* (Princeton Paperbacks 2nd Ed.)

Reports

17. Dr. A K Balyan, Meeting Demand Challenged of LNG market in India, Gas Technology Institute (accessed on Oct 01, 2020), http://www.gastechnology.org/Training/Documents/LNG17-proceedings/06_04-Dr-A-K-Balyan-Presentation.pdf.
18. Dr. Marie Lall, Political Economy of the Iran-Pakistan-India (IPI) gas pipeline, National University of Singapore, (accessed on Oct 01, 2020).