



The Stanford Natural Gas Initiative

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Stanford, CA

Industrial Affiliates Meeting



Goals of NGI

1. Complete original research to generate new knowledge about any aspect of natural gas
2. Increase opportunities for shared learning and collaboration in natural gas research and analysis
3. Ensure that new knowledge and unbiased facts are communicated to all stakeholders – seek to have NGI results used in science, technology, business, and policy

Upcoming Workshops and Symposia

NGI Workshop: **State of the science on natural gas leakage: remaining gaps and questions**

9-10 November 2016

NGI-GDP Symposium: **New business models and technologies to reduce energy poverty with natural gas**

9-10 May 2017

Key contact: Tisha Schuller

NGI Workshop: **Improving recovery from shale gas reservoirs**

October 2017

NGI Industrial Affiliate Meeting: **Stanford research review**

October 2017

NGI Workshop: **Integration of natural gas and renewables**

January 2018

Additional active planning for Future of Transportation and Methanol

Natural Gas Briefs

Topical series published by NGI and intended for broad, general audience

Upcoming briefs:

1. New opportunities in natural gas conversion (Jaramillo)
2. What do we know about natural gas leakage? (Brandt and Ravikumar)
3. Are methane hydrates a future natural gas resource? (Ritts)
4. De-escalating the fracking wars (Schuller)



Natural Gas Brief

Stanford | Natural Gas Initiative
School of Earth, Energy & Environmental Sciences
and Precourt Institute for Energy

AUGUST 2016



Why Isn't Natural Gas in India's Climate Plan?

Mark C. Thurber

India's energy-related emissions of greenhouse gases (GHGs) are predicted to grow far more than those of any other country between now and 2040.¹ This is a function both of India's low per capita energy consumption and GHG emissions today and its plan to continue to rely on carbon-intensive coal to supply the vast majority of its energy.² The climate policy commitment that India made in advance of the 2015 Paris Climate Conference—its Intended Nationally Determined Contribution (INDC)—aims to displace significant coal with an ambitious build-out of solar energy.³ At the same time, India's policymakers still appear to view coal as the only energy source that can reliably support economic growth, and they target a doubling of domestic coal production by 2020.⁴

One energy source that does not appear anywhere in India's INDC is natural gas, despite the fact that gas-fired power plants emit roughly half the CO₂ per unit energy output of coal plants. Just as importantly for India, gas-fired plants are negligible emitters of local pollutants, in contrast with coal plants, whose emissions of sulfur oxides (SO_x), nitrogen oxides (NO_x), and

particulates are a major contributor to air pollution. The reasons for the non-inclusion of gas in India's INDC appear obvious at first. India does not have nearly as much gas as it does coal, and gas is more expensive than coal. Relying too heavily on gas would therefore appear to put India's energy

security and economic development prospects at risk. And indeed, past experience seems to show the danger of a gas strategy. India's development of the Hazira-Vijaipur-Jagdishpur (HVJ) pipeline from the western gas fields resulted in the siting of fertilizer plants, power plants, and other gas-consuming industries along the pipeline route, but shortfalls in actual gas deliveries have been a persistent problem, in some cases forcing these facilities to convert to dual fueling. Also, in a 2006 report, the Planning Commission of India expressed skepticism based on their modeling that gas could be cost-competitive with coal for power generation.

I will argue that India should not be so quick to dismiss gas as an important part of

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its strategy for climate change mitigation (and local air quality improvement). Gas imports have the potential to be comparatively inexpensive for a long time due to the expansion of gas supply around the world (especially in the United States and Australia). Imported coal does not always come cheap, and coal use imposes many negative externalities on India that are not being accounted for in models of energy costs. That said, there are very real institutional obstacles to large-scale substitution of gas for coal. Gas pricing and regulatory

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Contributing Member

IHS Global

Basic Member

Leede Operating Company

Supporters

ExxonMobil

★ *New member since March 2016*

NGI Membership Categories

- All memberships are annual (calendar year) with no multi-year commitment
- Membership in NGI provides participation in consortium activities and is non-contractual
- Meaningful interaction between Stanford and Industrial Affiliates is the key value driver of the program
- Sustaining Membership is \$250,000/year
- Corporate Membership is \$75,000/year
- Basic Membership is \$35,000/year

Benefits	Sustaining	Corporate	Basic
Participation in annual affiliate meeting	X	X	X
Access to informed research	X	X	X
Informal meetings with faculty and researchers	X	X	X
Participation in workshops, seminars, and webinars	X	X	
Facilitated access to energy and environment programs	X	X	
Student recruitment and diversity initiatives	X	X	
Participation on NGI governance board	X		
Research-in-Progress Program	X		
Industrial Visiting Scholar Program	X		
Fellow/Mentor/Advisor Program	X		

Specific next steps to develop a relationship with NGI

✓ Attend a meeting of the Natural Gas Initiative

Offer your advice about important topics and research areas Stanford should be active

Get involved with the symposium on reducing energy poverty

- Suggest topics or possible speakers
- Join organizing committee as a sponsor or NGI member
- Sponsor follow-up research to respond to action plan developed at the meeting

Schedule a site visit to Stanford to meet more researchers working in your areas of interest

Join!