Earth Systems 188/288: The Political Economy of Energy in India

DRAFT Syllabus and Reading Schedule

Spring Quarter, 2007

Tuesdays 4:45 – 6:15 p.m. in Goldman Room, Encina Hall East

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COURSE DESCRIPTION

India is at the cusp of a radical transformation of its economy – a series of economic reforms and liberalization since the early 1990s has allowed the country to emerge as one of the fastest growing economies in the world. India not only has a booming IT sector, but has seen important reforms in its banking sectors and is increasing exposure to global markets.

Revitalization of the Indian energy sector has proven more difficult, and energy bottlenecks are widely seen as the “brakes” on the Indian economy. There have been some successes – Indian energy companies hold assets around the world and have access to the most advanced technologies in the industry – but these successes are overwhelmed by the fact that electric power utilities in the country are bankrupt and operating at huge losses while barely half the population has access to a reliable supply of electricity.

Indian energy policies have had a profound impact on the environment – both negative and positive. On the one hand, the central government provides free electricity to farmers, encouraging them to run irrigation pumps around the clock. The result has been widespread
depletion of underground aquifers, surface subsidence and salination of soils. On the other hand, India has adopted innovative policies such as a ban on petroleum-powered vehicles operating near the Taj Mahal (and the widespread use of electric vehicles near the monument), as well as a shift to natural gas for rickshaws in Delhi that have greatly reduced air pollution.

This seminar will focus on the political economy of energy policy in India. It will focus on how the central, state and local governments in India balance the competing goals of alleviating poverty, protecting the environment, and assuring the financial viability of India’s energy companies. The course will track 4-5 case studies that allow in-depth examination of these tradeoffs.

Likely topics for the case studies are:

1) **Energy services in urban areas** – exploring widespread electricity theft (often over 30%) and the political barriers to cracking down on theft. This study would involve speaking with government officials about attempts at reform and the opposition groups who believe that free electricity is a right.

2) **Oil drilling and refining** – government policies have recently encouraged private investment into this capital-intensive sector in an attempt to dramatically increase domestic oil production and reduce dependence on foreign oil. Site visits to the world’s largest oil refinery under construction by Reliance Industries and a visit to an oil platform off the coast of Bombay.

3) **Coal supply chain** – India has the world’s 4th largest coal reserves and will remain heavily reliant on coal to fuel its growing economy. The central government-owned coal company - one of the largest employers in the country – has been forced to compete with private and more efficient mining operations. At the same time, coal brings enormous environmental costs, both locally and globally, that India is struggling to address. We plan to visit with experts in coal finance, mine managers (through a coal mine visit), coal buyers for power companies, and labor activists.

4) **Rural electrification** – the Indian government has a stated policy of “electricity for all” by 2012, but all signs indicate it will fall far short of this goal. Site visits will include meetings with entrepreneurs who deliver electricity to regions where the grid fails to reach and to towns that have recently gained access to the grid.

5) **Growth in private power producers** – Private electricity generators have begun to operate in India, offering more efficient and reliable service, but at higher prices than have historically been seen in India. Likewise, businesses, frustrated by the unreliability of the Indian electricity grid have increasingly installed self-generating capacity. Site visits will include state-of-the-art generating facilities for new businesses operating in Bangalore or Delhi, as well as a visit to a privately owned power plant – most likely operated by China Light and Power, Ltd.

**GRADING:** The course will count for three units with the breakdown as follows.

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<th>Component</th>
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<tr>
<td>Briefing Memo</td>
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<tr>
<td>Group Presentation</td>
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<tr>
<td>Class discussion</td>
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By the end of the first day of class, students will select one of the five course topics to study in more depth in a small group of 2 or 3. These groups will present to the class on the day of their course topic and will prepare a briefing memo to the class on a subtopic within this focus. For example, a student might present during week 3 on oil and gas and write a memo on the Jamnagar refinery we plan to visit.

Note: Participation in the India trip is not graded per se (other than for your participation) BUT IT IS MANDATORY THAT YOU PARTICIPATE IN THE ENTIRE TRIP or it will not be possible to receive a passing grade. No exceptions.

COURSE CALENDAR AND READINGS

Week 1 – Introduction to India: Economic and Political Environment
- Luce, Edward. *In Spite of the Gods: The Strange Rise of Modern India*
- Kockak, Anjani. “Development Concerns: China and India.”

Week 2 – Introduction to Energy in India

Week 3: Oil and Natural Gas

Week 4 – Coal Supply Chain
- Coal Mine Nationalization Act of 1973 (skim)
- Kamla-Raj, “Wage-Productivity Relationship in Coal India Limited”
- Krishnamurthy, “Environmental Impacts of Coal Mining in India”
- Ghosh, “Assessment of Advanced Coal-Based Electricity Generation Options for India”
- Mathur, Chand, et. al. “Optimal use of Coal for Power Generation in India”
- Kulshrestha and Parikh “A study of Productivity in the Indian Coal Sector”

Week 5 – Electricity Generation in India
- Ministry of Power Development of Large Size Ultra Mega Projects

Week 6 – Energy and pollution in the urban environment

Week 7 – Rural energy
- [Readings recommended by TERI]
- “Energy Use Pattern and Household Welfare Estimates: A Study on Rural Households in Bangladesh”