Energy Sector Governance Program Grant

“Smart Development” Initiative

MONTHLY REPORT – MAY 2005

Prepared for:
Energy Division—Energy Sector Governance Program
Office of Energy and Information Technology
Bureau for Economic Growth, Agriculture and Trade
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The following are the activities conducted in the month of May.

- Mr. Ezekiel Clottey from the Resource Center and Mr. Joseph Essandoh-Yeddu of the Energy Commission attended the New Era program, May 9-20. In addition to class sessions, they had a chance to visit an LNG regasification terminal in Louisiana, regulatory agencies in Austin and the Bureau of Economic Geology at UT (the program agenda is attached). Mr. Clottey’s team developed a gas-fired power plant project and Mr. Essandoh-Yeddu’s team worked on a project of refinery upgrades and power plant conversions. These were two of the best projects in five-year history of the New Era program.

- The Resource Center completed the first edition of the Guide to Electric Power in Ghana (sent separately). The RCEER will continue to update and refine the Guide.

- The Resource Center initiated the energy database with the help of Mr. Essandoh-Yeddu from the EC and Mr. Stephen Adu from PURC. Mr. Clottey is managing the database project. Currently the database includes:
  - Petroleum products consumption, 1990-2003
  - Petroleum products production, import and export, 2000-2003
  - Monthly electricity generation (by power plant), sales, export, import, 2002-2003
  - Electricity supply and demand balance (by fuel and consumer segment), 2000-2003

- The Steering Committee (Mr. Adu, Prof. Aryeetey of ISSER, Dr. Asante of RCEER, Dr. Foss and Dr. Gülen of IELE) developed the sustainability plan for the RCEER (Attachment 1).

- A course syllabus for Energy Value Chain Economics and Regulation is developed, and the University of Ghana Senate has been approached for approval of the course as an elective (Attachment 2). The course will be a regular 12-week course. The approval process may take up to a year but we expect the course to be approved for summer 2006 semester.

- A short workshop program is also developed, modeled after IELE’s New Era program (Attachment 3). IELE created similar adaptations in Bangladesh and also for a group of assistant energy experts from the Turkish regulator. The RCEER workshop agenda uses these experiences but customizes content according to the needs of the Ghanaian energy sector. This workshop is not

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1 On June 1, 2005, UH IELE becomes part of the University of Texas-Austin as the Center for Energy Economics, Bureau of Economic Geology. We are developing a transition plan that will enable completion of work on the grant, including financial close out, through the UH Office of Contracts and Grants as planned in our agreement. Details on our transition plan are forthcoming from UH OCG.
part of original deliverables but offers a good opportunity for RCEER to initiate its educational activities and to test its ability to generate revenues through such training programs.

Next steps

Actions expected in the next couple of months include:

➢ Educational Forum on Electric Power.
APPENDIX 1
Sustainability Plan
for the Resource Center for Energy Economics and Regulation
at Institute of Statistical, Social and Economic Research,
University of Ghana, Legon
June 1, 2005 – May 31, 2006

By the Steering Committee

Introduction
The Resource Center for Energy Economics and Regulation at ISSER, University of Ghana – Legon was established in September 2004 with financial support from the USAID through the Energy Sector Governance Program grant to Institute for Energy, Law & Enterprise at University of Houston. The mission of the Center, as established by the Conceptual Framework developed at the beginning of the project, is to become an independent resource for data, research, policy analysis, training and public education on energy and utility economics, regulation, and energy sector policy and development in Ghana and, ultimately, the greater region of West Africa. Given the performance of the Center since September 2004, we believe that the Center has the support of many key players in the Ghanaian energy sector moving forward with its mission. So far, activities focused on research and public education and outreach; but training activities are planned and energy data collection started. Its reports have been well received and its events have been well attended. The media coverage has been favorable. There are several additional factors that will help RCEER sustain itself in the long-run.

- The Center was established and its mission was formed with input from some of the key players in the Ghanaian energy sector such as the Public Utilities Regulatory Commission (PURC), and the Energy Foundation. These entities remain committed and more are likely to join the Board of Advisors and get involved in Center activities. For example, the Ministry of Energy commissioned RCEER to undertake a study on the socioeconomic impact of petroleum deregulation, which was completed by the Center in two months and well received. Also, the new leadership at the Energy Commission will likely get more involved with RCEER.

- The current host of the RCEER, ISSER at University of Ghana – Legon, is a well established research center that is highly respected. In addition, ISSER’s focus and experience in keeping track of the Ghanaian economy has helped RCEER, for example in the petroleum deregulation study the Center did for the Ministry.

- There is a need for research, training and public outreach and education in a wide variety of energy issues in Ghana. The introduction of natural gas into Ghanaian energy mix offer fertile ground; with its natural gas primer and associated educational seminar, RCEER has an early-mover advantage in this area. IELE’s expertise with natural gas markets around the world shared with RCEER staff during their visits to Houston and through mentoring provides RCEER with another advantage. Petroleum deregulation, electricity restructuring and regulation of these industries offer many other opportunities.

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2 The Steering Committee consists of Mr. Stephen Adu of the Public Utilities Regulatory Commission, Prof. Aryeetey of ISSER, Dr. Felix Asante of RCEER and Dr. Michelle Foss and Dr. Gürcan Gülen of IELE.

3 As of June 1, 2005, UH IELE will become Center for Energy Economics at Bureau of Economic Geology at University of Texas, Austin.
Naturally, there are challenges such as expanding the support network for the RCEER while maintaining current supporters and producing high quality research, training and outreach activities. Fundamentally, this is a resource problem. The Center currently has two dedicated researchers who also carry out many administrative and managerial tasks. The Center has been using outside experts very efficiently and should continue to do so; but, eventually, the Center will need to grow to solicit, win and manage many more projects. As such, a major goal in many of the proposals that will be developed to pursue projects listed below will be to allow for additional revenues to support staff growth (both research and administrative) at RCEER.

**Progress and Lessons Learned**

Immediately after its establishment, the RCEER has actively started its work towards achieving its goals. The RCEER was commissioned by the Ministry of Energy to study the socioeconomic impacts of petroleum deregulation in Ghana, which was completed in two months and very well received. This report showed clearly the potential for RCEER to carry sponsored research. As part of its grant activities, the RCEER finished a natural gas primer and held a seminar to share it with energy professionals and the public in general. The Center also produced the Guide to Electric Power in Ghana and will hold an educational seminar on electricity. In addition, an energy industry database was initiated and an energy economics course for the university and a short professional capacity building program were developed.

All of these activities have allowed RCEER to develop a better understanding of the energy sector’s needs in Ghana. One of the important lessons learned was the need to form a network of energy professionals that can support RCEER activities, both from a leadership perspective and as participants in Center activities (e.g., writing reports, presenting at seminars). It is also important for the RCEER to increase its exposure and visibility through more media appearances, more outreach activities and expansion of its support network. This experience forms the basis of the ideas proposed in this document for sustaining RCEER in the future and ensuring its value to the Ghanaian energy sector after the grant ends in summer of 2005.

**Sustainability**

In short, the sustainability of RCEER depends on two factors:

1- The availability of research, training and outreach projects with willing sponsors, and

2- The ability to expand the Center resources to attract and manage these projects.

The following scope of activities indicates clearly that there are many projects for RCEER to pursue. Given its early record and support of key industry stakeholders, RCEER is in a good position to take on some of these projects. Current staff of RCEER are growing as energy professionals every day as they work on Center activities and continue to interact with professionals from the sector. The next step is for both of them to be committed full time to RCEER and to pursue a couple of additional staff members, one for an administrative position and another for a research position. Also, the RCEER should have an office space and computing equipment commensurate with its activities and supportive of efforts to grow its reputation.

**Scope of activities/tasks for post-grant period**

There are many opportunities for energy research and training in Ghana. We believe that the RCEER should focus on the following list of activities in its first year of operation after
the completion of the original USAID grant. It is probably not realistic to expect that all of these activities can be accomplished in one year even if there are ready sponsors for each. The reason the list is inclusive of all opportunities identified at this time is to show the large potential for sustaining RCEER in its first post-grant year and beyond.

Sponsored research

- Ghana has a major sedimentary basin, the Voltaian Basin, which has been scarcely explored if at all. In addition, there are offshore basins that are somewhat more explored. Ghana’s petroleum laws do not seem to offer fiscal terms that are compatible with the level of possible resources and, perhaps more importantly, the size of local/regional market. The RCEER can study fiscal terms offered by Ghana in comparison to similarly endowed countries, taking into consideration the market conditions (potential size of the market, role of WAGP gas and other regionally available gas, perhaps from Côte d’Ivoire). Ghana National Petroleum Corporation (GNPC) and other entities knowledgeable on resource estimation and/or interested in the area can be recruited to sponsor and/or collaborate. For example, Devon Energy, which has drilled two dry holes offshore Ghana, is still interested in the country.

- Now that the WAGP is a reality, the understanding of the Ghanaian market for natural gas is even more important. There have been some studies looking at the potential of the market (e.g., by WAPCO); but it seems that a critical evaluation of existing studies along with an independent assessment of market potential is a worthwhile effort. Working closely with different ministries, associations (e.g., Association of Ghana Industries and Association of Bankers), and other entities such as the Energy Commission and Energy Foundation, and using ISSER’s expertise on the Ghanaian economy, a high quality study can be produced by the RCEER.

- With the arrival of natural gas to Ghana, it is useful to evaluate the market for crude oil and its products. Switching to natural gas in power generation will displace some if not all of the petroleum products used in this sector. In addition, pending deregulation of petroleum product prices will also have an impact on market dynamics as well as society in general, as indicated by the RCEER study commissioned by the Ministry. In the past, Ghanaian officials have considered refinery upgrades and expansion as well. A critical evaluation of the combined effect of these three forces (entry of natural gas, petroleum deregulation and refinery policy) should help companies, regulators and policymakers to better plan for the future. The Ministry of Energy, GNPC and Ghana National Oil Ltd are likely candidates to sponsor this research.

- As Ghana moves towards a deregulated petroleum market as well as a restructured electricity market, the value of accurate and timely information about energy production, transportation, consumption and price will increase significantly. Many entities, including the Ministry of Energy and PURC, expressed this need. The RCEER already initiated an energy database for Ghana. This effort can become more targeted with input and participation from the Ministry of Energy, EC, PURC and others. The RCEER has a particular advantage when it comes to collecting, tabulating and analyzing consumer-level data as evidenced by the petroleum deregulation study they produced for the Ministry.

Training activities

- Offering of workshops to journalists about fundamentals of natural gas. Tom Dorkinoo, Senior Editor of New Times Corporation that publishes a daily newspaper is
interested in helping to organize these sessions. It also seems possible to incorporate the Ghana Institute of Journalism in this effort.

- In addition to journalists, industries that would be likely customers of natural gas and the financial sector that would be financing local development of natural gas industry should also be targeted for workshops. **Association of Ghana Industries and Association of Bankers** could be approached to help sponsor and organize these sessions. Also, teachers can be targeted through collaboration with the University of Education Winneba; Dr. Kodwo Taale from the Department of Science Education can be approached to explore this avenue.

- In addition to natural gas, RCEER should develop **workshops on different aspects of electricity** (e.g., efficiency and conservation, rural electrification, pricing of electricity, gas-power linkages) once the Guide to Electric Power in Ghana is completed, and **workshops on different aspects of the petroleum sector** (e.g., making use of the findings from the petroleum deregulation study, refinery upgrades in Ghana). These workshops can be organized in collaboration with the Energy Foundation, Energy Commission, University of Science and Technology, Public Utilities Regulatory Commission and others (e.g., University of Cape Coast).

**Budget**

The RCEER has two dedicated personnel, a center coordinator and a researcher. This core staff administers day-to-day activities of the Center, and manages research projects and outreach programs. The RCEER also benefits from the administrative and physical infrastructure provided by ISSER. But, as mentioned before, for the Center to become more effective, to go after more projects, to reach out to a wider audience, an administrative person dedicated to RCEER and another researcher are desired.

With the assumption of these two additional staff members, a reasonable annual budget for the RCEER is about $23,000, with the following breakdown:

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>RCEER staff salaries</td>
<td>$18,000</td>
</tr>
<tr>
<td>RCEER O&amp;M</td>
<td>$2,000</td>
</tr>
<tr>
<td>ISSER Overhead</td>
<td>$3,000</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$23,000</strong></td>
</tr>
</tbody>
</table>

In addition, the Center benefits from a network of energy professionals in Ghana in its research, training and outreach activities. Based on experience with past projects, a reasonable estimate of fees paid to these outside consultants is $1,000 per month. Naturally, the number of outside experts and the length of their participation change according to the scope of each project. Each project proposal will include cost coverage for the appropriate amount of outside expertise.

**Sources of funding**

Some of the potential sponsors are already mentioned above for each of the potential projects. They include: The Ministry of Energy, GNPC, GOIL, PURC, EC, VRA, Devon Energy, WAPCO, Association of Ghana Industries, and Association of Bankers. The RCEER, through its staff and Board, have been communicating with some of these entities; but, formal proposals will have to be developed for each research project and submitted to potential sponsors.

The workshops and training programs offered by the RCEER should be self-supporting based on the participation fees charged to delegates. Although there is interest in these
programs, the RCEER will need to undertake more promotional activities to reach a wider audience and to be able to hold frequent training sessions at different locations.

There is also an opportunity for the RCEER to benefit from the Energy Fund, which is currently managed by the Energy Commission. The Energy Fund was created in part to support energy research and education activities. The RCEER, as it solidifies the support of the Ghanaian energy sector, is a strong candidate to benefit from this fund.

At the kick-off meeting of the Center in September 2004, Chairman Pianim of the PURC (also on the Board of Advisors of the RCEER) proposed additional fees on the services provided by PURC and EC, and/or budgetary contributions (5%) from PURC, EC and EF to fund the RCEER.

The RCEER should also pursue grant opportunities from national, regional and international sources. There are many multilateral agencies, companies, development agencies and foundations that sponsor energy-related research projects. Center for Energy Economics at UT-BEG (previously UH IELE) will help RCEER identify some of the most promising international opportunities.

Finally, CEE is pursuing additional funding from USAID to extend original grant period and help secure a smooth transition to sustainability for RCEER. Although we believe that funding from other sources will be forthcoming to sponsor projects at RCEER, additional USAID funding, if granted, will ensure that CEE remains closely engaged in Ghana and provide an international linkage to RCEER for mentoring, access to information and expertise, and technical assistance with projects.

**Implementation of Sustainability Plan**

There are three simple steps for putting this plan into action:

1. Based on this document, the Advisory Board will develop a priority list of projects and help RCEER to find sponsors for them.
2. The Steering Committee will then develop a work plan for the first post-grant year and long-term strategic plan and get it approved by the Board.
3. RCEER will increase its exposure and visibility (see below for details).

It would be much easier for the Center to attract sponsors and undertake these activities successfully, if it could strengthen its Advisory Board with strong participation from EC, VRA, GNPC, GOIL and others. The immediate goal should be to secure firm commitment of PURC, EC, the Ministry of Energy, VRA and EF. The Board needs to have regular meetings where Center priorities and projects can be evaluated, and new opportunities can be discussed. The high-level members of the Board will represent the Center in various circles and increase its exposure and reputation. The Center has done good work so far and it needs to get more recognition for it. Some of the other strategies that the Center can pursue on its own to increase visibility include the following:

- Preparation and distribution of **one-page flyers or short pamphlets** on fundamentals of natural gas and any other work by RCEER.
- Presentation of papers by RCEER on energy issues at a variety of forums.
- Publication of articles in the press.
- Half-day sessions on current energy issues for journalists. This is separate from the

In order for reaching out in a more organized fashion:

- The RCEER needs to **develop a contacts database** using preferably MS Access or a program with similar functionality. The database needs to include names, position
titles, affiliations, phone numbers, emails, addresses, and if possible, short info on energy interests. With such a database, it is easier to send out invitations to targeted groups for different events. For example, senior people can be identified so that they always receive invitations in the mail on letterhead stationary as this is the proper manner; journalists, academics, industry and the like can similarly be grouped for mass mailing (or emailing).

- There needs to be a one-page flyer on RCEER that would include the following: mission statement, list of advisory board members, list of staff, list of affiliated faculty and outside advisors, activities (past, current, future).

- A web site would also help increase RCEER visibility. Initially, a page can be created at ISSER’s site with minimal cost. Eventually, as RCEER grows, it will likely need to expand, add pages and data.
APPENDIX 2

RESOURCE CENTER FOR ENERGY ECONOMICS AND REGULATION (RCEER)

SYLLABUS FOR AN ELECTIVE COURSE IN THE MASTERS IN DEVELOPMENT STUDIES PROGRAMMES AT THE INSTITUTE OF STATISTICAL, SOCIAL AND ECONOMIC RESEARCH UNIVERSITY OF GHANA

NAME OF COURSE: ENERGY VALUE CHAIN ECONOMICS AND REGULATION

Introduction

Energy is a key input for economic development of countries. Typically, energy industries require large, integrated infrastructures that are capital intensive to build and require professional skill to manage efficiently. As a result of the importance of energy for development and the scale economies involved in delivering energy to consumers, a vertically integrated and monopolistic structure became the norm around the world, especially for the electricity sector. In most places, a government-owned monopoly generated, transmitted and distributed electricity. Many countries maintain integrated oil and gas monopolies as well. Under this structure, countries were successful in building basic infrastructure. But, these entities have been reaching their limits because they developed inefficiencies partly as a result of lack of competition; and they fail to invest in new infrastructure to meet growing demand because governments tend to use these companies’ revenues for general government expenditures. Restructuring of the energy sectors attracted some private investment but, in many places, establishing and sustaining competitive structures remains a very challenging task, partly because human resources with professional skills and understanding of energy value chain economics are scarce.

Ghana is certainly not an exception. Volta River Authority is the dominant state electricity company, generating and transmitting electric power. Another state company, Electricity Company of Ghana is responsible for distribution of electricity. Although there are currently no significant production of oil or natural gas in Ghana, Ghana National Petroleum Corporation has been the integrated state company. With restructuring efforts in the sector, two regulatory agencies, the Energy Commission and the Public Utilities Regulatory Commission, started playing important roles in creating an environment for commercial energy investments and in development of energy policy for the country. With the completion of West Africa Gas Pipeline, Ghana will have access to natural gas, primarily for power generation and industrial uses. Clearly, the Ghanaian energy sector is becoming more sophisticated and integrated with its
neighbors; as such, there is a greater need for studying economic principles that govern the energy businesses.

This course is intended to provide fundamentals of energy value chain economics to future professionals of the energy industry in Ghana. A better informed workforce will help ministries, regulatory agencies and companies operating in the sector perform better.

Reading Material
There is no assigned textbook for the course. There will be handouts and reading assignments. There are numerous resources on the internet to obtain background information on most of the topics we will discuss. An important site, for which you should establish a bookmark, is www.bp.com, where you can find the Statistical Review of World Energy. At the end of the syllabus, a list of references is provided.

Course Requirements
The elective will be a one semester (12 weeks) course. It will be three (3) credit hours course in the Masters in Development Studies Programme at the Institute of Statistical, Social and Economic Research (ISSER) of the University of Ghana

There will be a mid-semester examination (30%) and a final examination (70%).
COURSE OUTLINE

Weeks 1 & 2
- Some Basic Concepts
  - Definition of Energy
  - Measuring Energy
  - Energy Conversion and Efficiency
- Energy, Economy and Environment
  - Energy Consumption & Economic Growth & Human Development
  - Energy Intensity
  - Impact on Environment
- State of the Energy World

Week 3
- Economics of Exhaustible Resources
  - Reserves (possible, probable, proved) versus Resources (conventional, unconventional)
  - Theory of Optimal Depletion
  - Shortcomings of the Theory
    - Reserve Additions
    - Common Pool Problem

Weeks 4 & 5
- Oil Value Chain Components
  - Key Segments and Activities
  - Key Policy and Regulatory Considerations
- Investment in the Oil Value Chain
- Natural Gas Value Chain Components
  - Key Segments and Activities
  - Key Policy and Regulatory Considerations
- Investment in the Natural Gas Value Chain

Week 6
- Upstream Economics
  - A Model of Upstream Investment
- Pipeline Economics
  - A Model of Pipeline Investment
- Natural Gas Processing
- Refining
- Marketing

Week 7
- Liquefied Natural Gas (LNG)
  - Role of LNG in Global Natural Gas Trade
  - New LNG Supplies
    - Atlantic Basin
Pacific Basin
- LNG Value Chain
  - Liquefaction
  - Transport
  - Regasification
- LNG Pricing Mechanisms

Weeks 8 & 9
- Electric Power Value Chain Components
  - Key Segments and Activities
  - Key Policy and Regulatory Considerations
- Electricity Industry Restructuring
  - Key Drivers
  - Key Characteristics
- Investment in the Electric Power Value Chain
- Power Plant Economics
  - Key Considerations
  - Costs for Different Technologies
  - A Model of Power Plant Investment

Week 10
- Regulated versus Competitive Pricing
  - Objectives
  - Cost Plus
  - Rate of Return
  - Competitor Indexing
  - Geographical
- The Economic Welfare Goal and Universal Service
- State Monopoly versus Private Competition
- History of Energy Regulation

Week 11 & 12
- Energy Markets
  - Types of Markets
    - Spot Markets
    - Futures Markets
    - Forward Markets
  - Risk Management
    - Types of Risk
    - Risk Management Tools
    - Hedging & Speculation
- Economics of Alternative Energy
  - Power Generation
    - Technology
    - Economics
  - Transportation
ENERGY ECONOMICS BOOKS


Pennwell Press has many other books on different segments of the energy industry in its “non-technical” language series ([www.pennwell.com](http://www.pennwell.com)).

ACADEMIC JOURNALS

*Energy Economics*
*The Energy Journal*
*Energy Policy*
*International Journal of Regulation and Governance*
*The Journal of Energy and Development*
*The Journal of Energy Finance & Development*
*Resources, Energy and Development*
*Resource and Energy Economics*

MISCELLANEOUS INFORMATION SOURCES

**Industry Trade Journals**
*The Electricity Journal*
*Public Utilities Report’s Fortnightly*
*Natural Gas Yearbook* (annual)
*Oil and Gas Investor*
*Oil and Gas Journal*
*OPEC Bulletin*
*Petroleum Economist*
*World Oil*

**Industry Trade Newsletters**
*Coal Week*
*Foster’s Reports* (natural gas and electricity)
*Gas Daily*
*International Petroleum Finance*
*Latin American Energy Alert*
Natural Gas Week
Oil Daily
Petroleum Intelligence Weekly
Power Markets Week
Russian Oil Investor
World Gas Intelligence

Government Data Sources (look for Web sites)
Canada International Development Agency (CIDA)
European Commission (EC), Director General XVII, Energy
International Energy Agency (IEA)
NARUC – Global Regulatory Network
Organizacion Latinoamericana de Energía, Ecuador (OLADE)
U.S. Department of Energy (DOE), Energy Information Administration (EIA)
U.S. Federal Energy Regulatory Commission (FERC)
U.S. Agency for International Development (AID)
The World Bank
Other development banks (African Development Bank, InterAmerican Development Bank, Asia Development Bank, etc.)

Industry Trade and Research Associations (look for Web sites)
American Gas Association (AGA)
American Petroleum Institute (API)
Canadian Gas Association (CGA)
Canadian Association of Petroleum Producers (CAPP)
Edison Electric Institute (EEI)
Electric Power Research Institute (EPRI)
International Association for Energy Economics (IAEE)
National Petroleum Council (NPC)
Natural Gas Supply Association (NGSA)
Petroleum Technology Transfer Council (PTTC)
World Energy Council (WEC), proceedings of triennial congresses
World Petroleum Council (WPC), proceedings of triennial congresses

Other Energy Research Institutes (look for Web sites)
Center for Energy and Environmental Policy Research (CEEPR), MIT
East-West Center, Program on Resources, Hawaii
Harvard Electricity Policy Group
Institute for Public Utilities, Michigan State University
*Institut Français du Petrol
*Japan Energy Institute
*Korea Energy Institute
National Regulatory Research Institute (NRRI), Ohio State
*Norwegian Petroleum Institute
Oxford Institute for Energy Studies, U.K.
Public Utility Research Center, University of Florida
Stanford University Energy Modeling Forum
Tata Energy Research Institute, New Delhi (TERI; alternative and rural energy, environment)
University of California Energy Institute
University of Dundee Program on Petroleum Economics (U.K.)
Worldwatch Institute (all sectors and environment)
World Resources Institute (all sectors and environment)
* National (government-sponsored) institutes
APPENDIX 3

SCHEDULE FOR
RESOURCE CENTER FOR ENERGY ECONOMICS AND
REGULATION (RCEER) WORKSHOP

DAY 1 – Monday

OIL & GAS GLOBAL SCAN AND VALUE CHAINS

9:30AM  “Global scan” of world oil and gas trends
• Overview of oil & gas outlooks, forecasts and scenarios and related issues
• Driving forces underlying global energy supply and demand balances and prices – energy/economy relationships, global distribution of energy resources, global distribution of demand, factors determining development of supply and change in consumption
• Critical uncertainties – role of OPEC and other international associations, energy sector restructuring and government-business relationships, geopolitical balances, environment
• Discussion and conclusions
1:00PM  Lunch break

2:00PM – 5:00PM Oil & gas value chain economics:
• Overview of the value chain concept
• Application of the value chain concept to the energy industry
• Illustrations: oil value chain and natural gas value chain
  o Role of standards in defining commodities and associated markets
  o Commercial development of the energy value chains
• Demonstration of value chain pricing using the U.S. case
• LNG, GTL, CNG and other newer technologies

Dialogue
• Case Studies

DAY 2 – Tuesday

COMMERCIAL FRAMEWORKS & RESTRUCTURING

9:30AM  “Commercial framework” concepts: legal, regulatory, financial, business standards, international trade
• Define “commercial framework” concept – policy/regulatory platforms to accommodate commercial practices and development
• Private sector participation mechanisms (gas and power).

Finance and investment:
• Overview of financial requirements for energy project investments, global capital market considerations, deal structuring practices and trends
Results from other surveys and studies (IEA, World Bank, etc.)

1:00PM  Luncheon

2:00PM – 5:00PM Continue commercial frameworks – business case and application
• The path of restructuring (the steps - policy, planning, market design, regulatory body- which should be undertaken first or simultaneously, etc.)

Dialogue
• Case studies
DAY 3 – Wednesday
INVESTMENT ANALYSIS

9:30AM  Project economics
• Time value of money
• DCF analysis
• Investment criteria: NPV, IRR, PWP, PWI
• Upstream investment models
  • International agreements and contracts
  • Upstream fiscal models (concessions, contracts, agreements and related terms), and effects (results achieved), resource “monetization” issues

1:00PM  Luncheon

2:00PM
–  Pipeline investment model
 –  Power plant investment model

5:00PM  Natural gas distribution system investment model

Dialogue
• Case Studies

DAY 4 – Thursday
COMMERCIAL FRAMEWORKS SPECIFICS

9:30AM  Commercial frameworks problems and solutions
• Infrastructure development models (BOT, BLT, IPP, etc.) and related issues
• Transportation and transit access models, tariffs and tariff design issues
  Regional energy cooperation examples
• Distribution and end use considerations

1:00PM  Luncheon

2:00PM  Commercial frameworks problems and solutions (cont’d)
 –  Subsidies and incentives – country experience in phasing out price subsidies, establishing market pricing and end use markets, policy aspects, building an exit strategy from price subsidies
 –  Ongoing issues in regulating market power
 –  Summary – links between commercial frameworks and investment outcomes

DAY 5 – Friday
COMMERCIAL FRAMEWORKS SPECIFICS

9:30AM  Ghana Energy Sector Issues
• WAGP and introduction of natural gas to Ghana
• Refinery upgrade
• Upstream potential in Ghana

1:00PM  Luncheon

2:00PM  Ghana Energy Sector Issues (cont’d)

5:00PM

5:00pm  Presentation of certificates

5:30pm