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WORKSHOP SUMMARY

**POLICY AND FINANCING STRATEGIES
TO IMPLEMENT INNOVATION**

**A Workshop to Explore New Opportunities in the
Electric Power Sector of Developing Countries**

July 16, 1987

**Office of Energy
U.S. Agency for International Development
Washington, DC 20523**

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ACRONYMS

EPRI	Electric Power Research Institute
GE	General Electric Co.
IDB	Inter-American Development Bank
IFC	International Finance Corporation
LBL	Lawrence Berkeley Laboratory
ORNL	Oak Ridge National Laboratory
OTA	Office of Technology Assessment of the U.S. Congress
RFF	Resources for the Future
SCE	Southern California Edison Company
TDP	U.S. Trade and Development Program
UN/NRE	United Nations Natural Resources and Energy Division
UNDP	United Nations Development Programme
USAID	U.S. Agency for International Development

WORKSHOP SUMMARY

Introduction

On July 16, 1987 a multi-institutional workshop sponsored by the Office of Energy, U.S. Agency for International Development was held at the National Academy of Sciences, Washington, DC. The subject of the workshop was *Policy and Financing Strategies to Implement Innovation*; the focus was the electric power sector of the developing world. Participants included senior staff and officials from a wide range of public and private institutions¹. On the morning of July 17 members of the *ad hoc* Multi-Institutional Working Group met to discuss the Working Group's objectives and to prepare a preliminary plan of action. The agenda for July 16 is shown in Attachment A.

This workshop was motivated by the recognition that capital requirements to meet burgeoning electric power demands in developing countries are seriously straining the resources of their governments and of the international financial community. In turn this is limiting the capital resources available for other important development objectives.

Major new opportunities to address this problem have emerged with the recent development of innovative and economically compelling technologies for the electric power sector. These innovations include both new technologies and the use of technologies well established in a number of industrialized countries but untried in the developing world. However the introduction and widespread use of such technological innovations will require institutional and financial innovations as well, within the international donor and financial communities and in the host countries.

The purpose of the workshop was to explore the formulation of policies and investment strategies to implement new approaches to increasing the quality, reliability, and extent of energy services in developing countries. The potential for closer collaboration among the bilateral and multilateral development assistance agencies was a major focus of the meeting. An associated objective was to establish a mechanism for implementing the recommendations made at the workshop and following up opportunities for collaboration identified by the participants.

¹ In addition to USAID, institutions represented included the World Bank, the Inter-American Development Bank, the International Finance Corporation, the United Nations, the U.S. Trade and Development Program, the Electric Power Research Institute, Southern California Edison Company, Resources for the Future, the Office of Technology Assessment of the U.S. Congress, and the General Electric Company. The full list of participants is shown in Attachment B.

Outcome of the Workshop

The workshop resulted in a sharper definition of the LDC power sector challenge, in identification of some promising areas for collaboration, in establishment of an *ad hoc* Multi-Institutional Working Group as the implementing agent for future collaborative activities, and in the creation of a permanent Secretariat to support the Working Group. Several specific opportunities for collaboration were identified at the Workshop and are currently being explore.

Multi-Institutional Working Group Established

An *ad hoc* Multi-Institutional Working Group was established to formulate recommendations for innovative policies and investment strategies that can support the widespread diffusion of these new technologies. A major focus for the Working Group's activities is the identification of specific opportunities for new bilateral/multilateral cooperation and collaboration, leading in appropriate cases to bankable projects. These projects will support the goal of providing electricity services adequate for development goals within available capital resources. The first meeting of the Working Group took place at the National Academy of Sciences on Friday July 17.

Permanent Secretariat Established

A permanent Secretariat has been established at Oak Ridge National Laboratory to provide ongoing support to the efforts of the Working Group and to initiatives taken by the Working Group. A fund to support travel, presentations by leading technical, financial, and institutional experts, commissioned expert reports, and other activities has been established by the Agency for International Development, and will be administered by the Secretariat.

Identification of Opportunities for Multi-Institutional Collaboration

Workshop participants identified several potentially significant opportunities for collaboration to support innovative projects in the LDC power sector:

- o USAID/IDB cooperation on cane power projects in Latin America (transformation of local sugar industries to multi-product industries including use of biomass for power generation)
- o Potential USAID/IFC collaboration to review and assess a stalled proposal to IFC for an industrial power park in India, and to identify technological and institutional options that could improve its technical and financial viability
- o USAID/UNDTCD cooperation on energy conservation and efficiency initiatives for the industrial and commercial sectors in India
- o "Sister utility" relationships between U.S. and LDC electric utilities following the suggestion of Dr. Lawrence Papay of Southern California Edison Company that his utility would be interested in exploring such a relationship.

Communications with Secretariat and Working Group

Matters concerning issues to be addressed by the Multi-Institutional Working Group should be sent to Dr. David Jhirad. Matters concerning the Secretariat should be addressed to Dr. Edward Hillsman at Oak Ridge National Laboratory.

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MAJOR ISSUES AND RECURRING THEMES

Although no effort was made to establish a consensus of the workshop participants on any specific issue, several themes recurred in presentations, comments during open discussion, and comments by some participants during breaks. The following list is prepared not as an attempt to reach consensus, but to illustrate some of the concerns that participants raised at the workshop. One task of the Multi-Institutional Working Group will be to incorporate these concerns into its agenda.

The Need for Innovation

- o More than 40% of total public investment in major LDC debtor nations is for energy, and investments in electric power are as much as 75% of the total. Developing countries may need to increase their generating capacity by more than 50-100% during the next ten years, at costs of \$500-1,000 billion. The World Bank will make available only \$25-35 billion during this period, and other donors will not increase this amount significantly. At the same time, the rate of return on power sector investments has declined from 8-12% in the 1960s to a current level of approximately 5%, making it much more difficult to attract private investment.
- o Innovations in energy pricing, institutional reform, and innovative approaches to financing electric power investments all appear necessary in order to improve system efficiency and attract funding from outside government and development bank sources.
- o Neither new supplies, nor greater efficiency, nor price reform, nor technological innovation, nor financial innovation, nor the private sector, nor the public sector *alone* can close the financing gap. An integrated comprehensive approach is needed to provide electric power for development. Decisions made with an incremental perspective will not address the problem of meeting power demand in developing countries.
- o Developing countries need greater access to information about technological, financial, and institutional innovations in industrialized countries and in other developing countries. There is also a need establish norms so that utilities in developing countries can compare their financial, technical, and institutional performance with one another as well as with utilities in other countries.
- o Technological innovation cannot just be the donors' idea. It must solve a local problem and fit the circumstances of the local utility if it is to gain local support. A recurring example was that some technological innovations seem likely to be implemented in regions remote from a central grid, when these options are less expensive than grid extension.
- o Increasing the efficiency of electricity use in industry, buildings, and appliances is an area of major innovation for utilities and governments in developing countries to consider. Needs, incentives, and mechanisms will be different for innovations in end uses than for innovations in power supply.

The Need for Clear Government Policy

- o It is essential in many LDCs to involve the private sector to a much greater extent than in the past, as a source of financing, as a source of efficiency, and as a set of actors who can best implement some options. However local capital markets are poorly developed to link private capital and local power sector demands for funds. Money is often available to support private projects if the policy environment and incentives are right. Government policies in developing countries often hamper utility performance and the attractiveness of power projects for private investment.
- o It is necessary to match technology and available human resources, and to have some way of developing these resources if they are not already available for the task at hand. This will require changes in government policies to provide both training and adequate compensation for professional and technical personnel in the power sector.

The Need for Collaboration

- o There is a need for donor coordination and collaboration in assisting the power sectors of developing countries. Banks, including the multilateral development banks, tend to be technologically conservative, but some will seriously consider innovative application of proven technology; bilateral agencies are in a better position to use grant funding to try out new technologies. Consequently there is an opportunity for expanded bilateral/multilateral cooperation and collaboration in the power sector.
- o The objective of this collaboration should include the identification and financing of bankable projects that support an indigenous capacity for technological innovation in the power sector. The donors should identify a few countries where they can collaborate to demonstrate the effectiveness of collaboration.

To support and implement some of the recommendations, the formation of a Multi-Institutional Working Group, as proposed in the original invitation to the workshop, was supported by the workshop participants. This action was initiated on the morning following the Workshop.

MULTI-INSTITUTIONAL WORKING GROUP

An *ad hoc* Multi-Institutional Working Group has been established. The purpose of the Working Group is to identify and catalyze initiatives that can harness innovation in the LDC power sector. The Working Group will consider innovations in technologies, financing strategies, institutional changes, and other policies that developing countries, bilateral assistance agencies, and multilateral development banks can bring to bear on the common problem of power system expansion.

The Working Group will identify problems, opportunities, and issues to be considered in applying these innovative approaches. Ultimately the work of the Group should lead to the identification, assessment, and funding of bankable projects to provide electricity services adequate for development goals at lower financial cost and improved technical performance.

A secretariat, financed by the Office of Energy at USAID, has been established at Oak Ridge National Laboratory to provide the necessary administrative support for the working group.

Workshop participants identified several potentially significant opportunities for collaboration to support innovative projects in the LDC power sector. The Working Group, at its initial meeting on July 17, began its identification of opportunities for inter-institutional collaboration with this tentative list:

- o USAID/IDB cooperation on cane power projects in Latin America (transformation of local sugar industries to multi-product industries including use of biomass for power generation)
- o Potential USAID/IFC collaboration to review and assess a stalled proposal to IFC for an industrial power park in India, and to identify technological and institutional options that could improve its technical and financial viability
- o USAID/UNDTCD cooperation on energy conservation and efficiency initiatives for the industrial and commercial sectors in India
- o "Sister utility" relationships between U.S. and LDC electric utilities following the suggestion of Dr. Lawrence Papay of Southern California Edison Company that his utility would be interested in exploring such a relationship.

One immediate consequence of this meeting was a subsequent meeting between officials of the Inter-American Development Bank and the Agency for International Development to explore collaboration on cane power projects in the Caribbean and Central America. An informal USAID/IDB consultative body has been established to pursue these mutual interests, including the possibility of USAID funding of prefeasibility studies followed by IDB project financing.

Approach

The Working Group will combine meetings, expert briefings, commissioned working papers, and informal discussions to develop its recommendations. Use of electronic communication will permit interaction among Working Group members in the Philippines, India, and elsewhere abroad. One objective is to identify specific opportunities are identified, such as the mutual interest of USAID and the IDB in cane power projects.

Products

The conclusions and recommendations of the Working Group will be presented to a group of experts, including the participants in the July 16 workshop, for review and comment. These will be incorporated in a final report that will:

- o Identify and summarize the principal problem(s) of the LDC power sector,
- o Assess major technological, financial, and institutional innovations that constitute potentially important elements in an LDC power sector strategy,
- o Identify and characterize the most important issues facing both the host countries and the international lending/investment community in their attempts to improve the LDC power sector, and
- o Identify specific targets of opportunity (bankable projects) and identify the most appropriate investment and lending vehicles for these projects.

The most important result of this effort will be identification of promising opportunities for investment to catalyze innovative approaches in the LDC power sector, leading to preinvestment and feasibility studies, and in the most attractive cases, to investment and/or lending.

Schedule

- o A one-day meeting of the full Working Group is being planned for September 1987.
- o A meeting is being planned between the Working Group and leading private investment banks, other investors including major architect/engineering firms, and trading companies.
- o The report of the Working Group is planned for late fall, 1987.
- o An international conference on innovation in the power sector is being planned (subject to final approval by the Government of India) in New Delhi in 1988. The conference will examine problems and opportunities for innovation to reduce improve the economic, financial, and technical performance of the Indian power sector.

Provisional Membership of the Multi-Institutional Working Group

Dr. David Jhirad (Chair)
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Secretariat

The secretariat established at Oak Ridge National Laboratory is providing ongoing support to the efforts of the Working Group and to initiatives taken by the Working Group.

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Attachment A
FINAL AGENDA

ATTACHMENT A

FINAL AGENDA

**POLICY AND FINANCING STRATEGIES
TO IMPLEMENT INNOVATION**

Thursday, July 16, 1987

Boardroom
National Academy of Sciences
2101 Constitution Avenue
Washington, DC, 20418

Coffee, Convening of Participants (0830 - 0900)

Morning I (0900 - 1045)

Chair: Dr. David Jhirad, USAID

- o *Introduction of Participants*
- o *Welcome* (Dr. Nyle Brady, Sr. Assistant Administrator, USAID)
- o *Background and Objectives for the workshop* (Dr. David Jhirad, USAID)
- o *The LDC Power Sector Financing Challenge* (Dr. Mohan Munasinghe, World Bank)
- o *Implementing Innovation in the Power Sector:* (Dr. Lawrence Papay, SCE)
- o *Discussion* (Moderator: Dr. Jack Vanderryn, USAID)

Coffee Break (1045 - 1100)

Morning II (1100 - 1215)

- o *Panel Discussion: Perspectives on Innovation for the Power Sector*

Moderator: Dr. John Gibbons (OTA)

Panelists: Dr. Nicky Beredjick (UN/NRE)
Mr. Robert Fri (RFF)
Mr. Milton Klein (EPRI)
Dr. Thomas Nicastro (AID)
Dr. Eugene Zeltman (GE)

LUNCH (1215 - 1345)

Members' Dining Room

Afternoon I (1345 - 1510)

- o *Discussion of Multi-Institutional Working Group (Dr. David Jhirad, USAID)*
- o *Panel Discussion: Financing Innovative Approaches in the LDC Power Sector [min]*

Moderator: Dr. James Sullivan, USAID

Panelists: Mr. Ronald Brousseau (IDB)
Mr. Patrick D. Deale (IFC)
Ms. Nancy Frame (TDP)
Dr. Rustam Lalkaka (UNDP)
Dr. Eugene McCarthy (World Bank)
Dr. Mohan Munasinghe (World Bank)

Break (1510 - 1525)

Afternoon II (1525 - 1715)

- o *Panel Discussion: Implementing Innovation in the LDC Power Sector*

Moderator: Dr. David Jhirad (USAID)

Panelists: Mr. Robert Archer (USAID)
Mr. Donald A. Giampaoli (IDB)
Dr. Jerome Weingart (LBL)
Dr. Tom Wilbanks (ORNL)

- o *Comments and recommendations by participants*
- o *Concluding remarks (Dr. Jack Vanderryn, USAID)*

RECEPTION

1715 - 1900

Members' Dining Room

Attachment B

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ATTACHMENT B
WORKSHOP PARTICIPANTS

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