



USAID
FROM THE AMERICAN PEOPLE

USAID-GON S06

Increased Private Sector Participation in Environmentally and Socially Sustainable Hydropower Development

**PRIVATE SECTOR HYDROPOWER
DEVELOPMENT PROJECT – 2
Contract No. 367-C-00-02-00011-00**

PROJECT COMPLETION REPORT

MAY 2007

This report is made possible by the support of the American People through the United States Agency for International Development (USAID.) The contents of this report are the sole responsibility of International Resources Group (IRG) and do not necessarily reflect the views of USAID or the United States Government.

Private Sector Hydropower Development Project – 2 (PSHDP-2)

USAID-GON·SO6 - Increased Private Sector Participation in Environmentally and Socially Sustainable Hydropower Development

Project Completion Report

December 12, 2001 through December 31, 2006

Draft: January 2007

Final: May 2007

Submitted by

International Resources Group Ltd.
1211 Connecticut Avenue, NW, Suite 700
Washington, DC 20036 USA

IRG/Nepal
DOED Building, Anam Nagar
Kathmandu, Nepal

under

USAID/GON – SO6 Increased Private Sector Participation in
Environmentally and Socially Sustainable Hydropower Development
Contract No. 367-C-00-02-00011-00



Private Sector Hydropower Development Project – 2 (PSHDP-2)

USAID-GON • SO6 - Increased Private Sector Participation in Environmentally and Socially Sustainable Hydropower Development

TABLE OF CONTENTS

<u>DESCRIPTION</u>	<u>PAGE</u>
ACRONYMS AND ABBREVIATIONS.....	iv
1.0 INTRODUCTION	1
1.1 Background.....	1
1.2 Status of Key Power Sector Issues in 2001	3
1.3 Report Layout.....	4
2.0 PROJECT OBJECTIVE, DESIGN, AND PROCEDURES	5
2.1 Project Objective	5
2.2 Project Design.....	5
2.2.1 Power Sector Reform, Policy, Legal, Regulatory, and Institutional Strengthening ..	5
2.2.2 Power Marketing, cross-border power trade	5
2.2.3 Project development and financing	5
2.2.4 Public Outreach	6
2.2.5 Social and environmental sustainability	6
2.2.6 Training Support.....	6
2.3 Annual Work Plans.....	6
2.4 Progress Monitoring	6
3.0 EXPECTED AND ACHIEVED RESULTS	9
4.0 TECHNICAL AND TRAINING ACTIVITIES AND ACHIEVEMENTS	13
4.1 Power Sector Reform, Policy, Legal, Regulatory, and Institutional Strengthening	13
4.1.1 Power Sector reform.....	13
4.2 Power Marketing and Cross-border power trade.....	14
4.3 Project development and financing	15
4.4 Public Outreach Program.....	15
4.5 Social and environmental sustainability	16
4.6 Infrastructure improvements.....	16
4.7 Cost of PSHDP-2 Efforts.....	16
5.0 TRAINING ACTIVITIES	19
6.0 PROJECT STAFFING	21
7.0 ADMINISTRATIVE SUPPORT ACTIVITIES	23
8.0 CONCLUSIONS	25
9.0 LESSONS LEARNED	27
10.0 RECOMMENDATIONS	29

APPENDICES

Appendix 1 - PSHDP-2 Contract Activities	33
Appendix 2 - Lists of PSHDP-2 Outputs	35
Appendix 3 – List of STTA Specialists and Subcontractors	51
Appendix 4 – Training Activities	45
Appendix 5 – List of Non-Perishable Commodities transferred to DOED/USAID	51

ACRONYMS AND ABBREVIATIONS

ADB	Asian Development Bank
BOOT	Build, Own, Operate, and Transfer
BPC	Butwal Power Company
CLIN	Contract Line Item
COP	Chief of Party
CRED	Community Rural Electrification Department
DCOP	Deputy Chief of Party
DOED	Department of Electricity Development
EIA	Environmental Impact Assessment
ETFC	Electricity Tariff Fixation Commission
GON	Government of Nepal
HDP	Hydropower Development Policy
IEE	Initial Environmental Examination
IPP	Independent Power Producer
IPPAN	Independent Power Producers Association of Nepal
IR	Intermediate Result
IRG	International Resources Group
kW	kilowatts
MFI	Multi-lateral Financial Institutions
MOWR	Ministry of Water Resources
NEA	Nepal Electricity Authority
NERC	Nepal Electricity Regulatory Commission
PDF	Power Development Fund
PIC	Public Information Center
POP	Public Outreach Program
PPA	Power Purchase Agreement
PSHDP	Private Sector Hydropower Development Project
RFP	Request for Proposal
RFQ	Request for Qualification
SO	Strategic Objective
SOT	Strategic Objective Team
STTA	Short-term Technical Assistance
TA	Technical Assistance
TL	Transmission Line
USAID	U. S. Agency for International Development
WB	World Bank
WECS	Water and Energy Commission Secretariat

1.0 INTRODUCTION

The US Agency for International Development (USAID) and the Government of Nepal (GON) designed the Strategic Objective 6 (SO6) to maintain and enhance the momentum created by previous Mission efforts since 1996 and the new policies of the GON to develop Nepal's vast hydropower potential in an environmentally and socially sustainable manner for domestic use and for exports and to increase private sector participation in such development. The USAID and the GON initiated implementation of the 5-year (2001-2006) strategy as the Private Sector Hydropower Development Project -2 to follow its predecessor (PSHDP-1) which ended in December 2001. International Resources Group (IRG) was selected as the implementing partner of PSHDP-2 following IRG's successful completion PSHDP-1.

PSHDP-2 comprised the bulk of the Mission's technical assistance and training program, focusing mainly on government counterparts, building much needed capacity during its five-year term. IRG's principal counterpart agency was the Department of Electricity Development (DOED) within the Ministry of Water Resources (MOWR). However, IRG's work included assistance to the DOED and other component agencies of the MOWR:

Ministry of Water Resources - The MOWR is the line ministry with primary jurisdiction and authority over the hydropower sector and is responsible for the development and protection of Nepal's water resources. The Minister for Water Resources serves as chairman of the Nepal Electricity Authority's (NEA) Board of Directors and appoints NEA's directors; the Secretary of the MOWR is also a member of NEA's Board of Directors. The Secretary of MOWR issues licenses to develop and operate hydropower projects with an installed capacity greater than 1,000 kilowatts (kW).

Department of Electricity Development - The DOED is the part of the MOWR responsible for promoting and assisting private and public sector entities in licensing the development of hydropower generation, transmission and distribution projects, preparing guidelines to conduct studies and designs for hydropower projects, for inspection and monitoring of projects during construction and operation, and for collecting royalties due to GON and local agencies from operating hydropower plants.

Electricity Tariff Fixation Commission (ETFC) - The ETFC is a tariff regulatory body set up to review and approve tariff filings by NEA and other licensed entities, such as the Butwal Power Company (BPC). DOED's Director General serves as an ex-officio secretary of ETFC, and DOED acts as the technical secretariat of the Commission.

Nepal Electricity Authority - NEA is wholly owned by GON and is responsible for most of the country's generation, transmission, dispatch, and distribution of electricity. It carries out system planning studies, including demand forecasting and generation planning. NEA is the single-buyer for all energy generated by Independent Power Producers (IPPs) for supply to the Integrated Nepal Power System and for importing power from India to meet local demands. NEA formed a Community Rural Electrification Department (CRED) to implement GON's community-based electrification program created in 2003.

Water & Energy Commission Secretariat (WECS) -The WECS is an advisory body to assist GON, the MOWR, and other related agencies in formulating policies and planning projects in the water and energy sectors.

1.1 Background

Nepal's large hydroelectric potential is its principal under-developed natural resource. Nepal has over 43,000 MW of economic hydropower potential but less than two percent (550 MW) has been developed because of a lack of domestic resources and the significant reduction in funding for hydropower projects from multi-lateral financial institutions (MFI) such as the World Bank (WB) and

the Asian Development Bank (ADB) since the mid-1990s. The majority of Nepal's population lacks access to modern energy services and relies on bio-fuels, mainly firewood (68%), to meet its energy needs with serious consequences for Nepal's forests and soils. The lack of electricity is a major constraint to economic development of the country and the GON's poverty alleviation initiatives.

GON Initiatives and Private Sector Involvement in Nepal's Hydropower Development

In 1992, the GON passed a package of power sector laws and regulations with a view to open the doors for private investment in Nepal's hydropower development. The GON also enacted a series of legislative acts and institutional changes to bring environmental and social review processes up to international standards. These laws, regulations, and their implementation, together with other factors, resulted in a complex and lengthy approval and development process. USAID/N has been involved in assisting the GON since 1992 and has made significant contributions to improving the enabling environment for private investment in the power sector. The Private Electricity Project (1995-1998) and PSHDP-1 (1998-2001) are noteworthy in this regard.

NEA's tariff structure does not generate sufficient revenue for investing in new projects. Hence, the GON's inability to mobilize low-cost funds from donors and MFI for hydro development necessitated the NEA to look for private funding of projects. The GON's on-lending rate of donor funds to the NEA was 10.25 percent and coupled with donor conditions, have pushed up NEA's own hydro development cost of hydro projects very high. Hence, the NEA negotiated and the GON concurred with an energy purchase price with two large IPPs (36 MW Upper Bhoite-Koshi hydropower project and the 60 MW Khimti power project) based on its own cost of development of hydropower, alternative diesel plants using imported fuel, and the opportunity cost to the nation's economy because of a 100 MW shortage in 2001. By 2001, private sector investment in Nepal's hydropower development amounted to approximately \$250 million in these two projects. In addition, local entrepreneurs had invested around \$23 million in projects under development with planned installed capacity of approximately 30 MW. All private projects are developed as run-of-river projects without any storage capacity and provide energy, when available, to the NEA system.

The MOWR consolidated and strengthened the erstwhile Electricity Development Center and established the DOED in January 2000 to streamline and implement transparent hydro project licensing process and to monitor operation of these projects. However, the authority to issue licenses for hydro project development rested with the Secretary of the MOWR. The DOED's mandate included promotion of private investment and development of hydropower and facilitation of private developers and government owned agencies such as the NEA, to work with GON agencies through a streamlined "one-window" operation.

Power export - A key for Nepal's economic growth

The main challenge has been to find ways to develop Nepal's immense hydropower potential in an environmentally and socially sustainable manner to provide affordable energy to the population and to transform it to additional economic wealth through large-scale export. In 2001, the GON passed the Hydropower Development Policy (HDP 2001) with significant assistance from PSHDP-1. Among other things, the Policy mandated a focused and accelerated hydropower development to meet domestic needs and for large scale exports, a better and stronger regulatory regime, unbundling of the government-owned NEA, and streamlining of promotional and licensing procedures to increase private sector investment in competitive hydropower development at affordable prices. Clearly, there exists a market for Nepal's power in India at competitive prices. The Indian Electricity Act of 2003 provides access to India's market for private developers, the NEA, and any joint venture developing Nepal's hydropower. Power export would provide a major source of revenue to the GON to address national health, education, and other issues in a significant manner as proven through recent agreements for power sales from Bhutan to India and Lao PDR to Thailand.

Power Sector reform

Because the Minister for Water Resources serves as chairman of the NEA Board of Directors and appoints NEA's directors and because the Secretary of the MOWR is also a member of NEA's Board of Directors and issues licenses to develop and operate hydropower projects with an installed capacity greater than 1,000 kW, there is a potential for conflict of interest in providing a level playing field for public and private project development.

The DOED is responsible for promoting and assisting private and public sector entities in licensing the development of hydropower generation, transmission and distribution projects, for collecting royalties from operating hydropower plants, for guidelines to prepare studies and designs for hydropower projects, and for inspection and monitoring of projects during construction and operation. The DOED assists the MOWR in project licensing process. Thus there is a potential conflict of interest between DOED's promotional and regulatory responsibilities.

Electricity Tariff Fixation Commission is a tariff regulatory body set up to review and approve tariff filings by NEA and other licensed entities, such as the BPC. ETFC does not have technical capability for assessing tariff applications of the licensed entities and relies on these entities themselves. DOED's Director General serves as an ex-officio secretary of ETFC, and DOED provides the technical secretariat of the Commission where possible, an arrangement that also creates a potential for conflict of interest.

A strong and independent Regulator, acting in the interest of the consumer, would facilitate private sector investment by providing a level playing field and a realm of predictability of outcomes thus reducing developer risks. Power sector reform may reduce the cost of delivered electricity by requiring transformation of the constituent businesses into commercial enterprises that will seek to cut waste and improve the efficiency of their operations because they are subject to competitive pressures, from the market and from the Regulator. Improved transparency and governance resulting from reform may also reduce costs by reducing arbitrariness of decisions and providing a level playing field for private sector investors and a level of assurance for private investors for predictability of outcomes and risk management. Reforms can also support democracy by creating the opportunity through regulatory bodies for consumers and other stakeholders to publicly participate in policy and economic decisions regarding the provision and quality of energy services.

Public Involvement

Historically every politician, bureaucrat, and donor agency has concluded that large-scale development of Nepal's immense hydropower potential for domestic use and export holds the greatest promise to significantly increase national revenues to meet successive Governments' commitment to economic and social improvement. With approximately 69 percent of all Nepal's energy coming from fuel wood, forests are being cleared at an alarming rate. Without any other viable domestic energy resource, timely development of large and small hydro projects was required to realize GON goals for 100 percent rural electrification. Unfortunately, considerable misconception also exists regarding the high cost of electricity, need for electricity sector reform, NEA's operations, cost of IPP generation, and cost of donor-financed hydropower projects.

Coupled with the requirements of the Environmental Protection Act to involve the stakeholders in the decision making process for hydropower development, a clear need was identified to increase stakeholder awareness and knowledge level regarding the potential benefits of balanced hydropower development to Nepal.

1.2 Status of Key Power Sector Issues in 2001

The Parliament, having passed the HDP 2001, was keen on regulatory reform of the power sector. The ADB was interested in funding a power sector reform study, particularly to address the unbundling of

NEA. The WB was keen on assisting private sector development of hydropower through a Power Development Fund (PDF). IRG, under the PSHDP-1 contract, had developed an institutional concept for the \$35 million for PDF to assist the private sector with low cost loans for hydropower development and assisted the DOED to evaluate proposals from domestic financial institutions for the position of PDF Administrator. IRG had assisted to pre-qualify international developers for a medium size project development.

PSHDP-1 had prepared several guidelines and manuals to assist with the design and environmental assessment for hydropower projects.

Unfortunately, significant power shortages and rolling-blackouts persisted, electricity prices were high, no new large investment in hydropower realized, and with intensified insurgency the promise of hydropower for economic uplift remained elusive.

1.3 Report Layout

This project completion report provides details of PSHDP-2 activities, achievements, and the status of power sector issues at project completion. Section 2 describes project objective, strategies, actions, and procedures implemented to achieve the objective and monitor project progress through the five years. Section 3 provides a summary of the project results and against the targets. Technical activities and PSHDP-2 achievements are presented in Section 4, followed by details of Training Activities (Section 5), Project Staffing (Section 6), and Administrative Support Activities (Section 7). Our Conclusions, Lessons Learned, and Recommendations are included in Sections 8, 9, and 10 respectively.

2.0 PROJECT OBJECTIVE, DESIGN, AND PROCEDURES

2.1 Project Objective

Primary objective of PSHDP-2 was to provide technical assistance and associated training services to assist the GON to increase private sector participation to develop Nepal's vast hydroelectric resources in an environmentally and socially sustainable manner.

2.2 Project Design

IRG's contract with USAID identified 26 activities (Appendix 1) of technical assistance (TA) and training to be provided to GON agencies and other stakeholders in achieving project objective. IRG's activities were designed under the following strategic areas to achieve the objectives of the program:

2.2.1 Power Sector Reform, Policy, Legal, Regulatory, and Institutional Strengthening

Assistance in this strategic area focused on developing and implementing:

- Simple, clear, performance-focused policy reform
- Meaningful and targeted legislative mandates to maximize development while managing risks through inclusive stakeholder participation
- Streamlined procedures and guidelines for effective sector performance
- Tours and peer-interaction and exchange conferences in the region to study experiences of regulatory reform
- Technical assistance programs to build and strengthen GON capacity in hydropower planning, management, engineering, economics, project development, operation, financing, and risk assessment and management
- Infrastructure support through provision of computers, networks, office systems, technical databases, and vehicles

2.2.2 Power Marketing, cross-border power trade

Major efforts to assist with power marketing included

- Preparing a focused report on Indian and Nepali electric power market analysis, opportunities and challenges, practices, laws, and negotiations strategies
- Tours and peer-interaction opportunities to countries in the region to study experiences of cross-border power policies, power trade, private sector investments in the power sector, government role and public/private partnership opportunities in large power developments and contract mechanisms and negotiating features
- Study of alternative Nepal-India transmission line links to assess potential structural issues with Nepal-India power transmission links and to facilitate stakeholder interaction to initiate implementation of feasible solutions

2.2.3 Project development and financing

IRG's focus in this strategic area included providing assistance

- To GON to secure and implement WB's PDF for hydropower project development;
- To DOED to solicit competitive bids for development of medium-size hydropower projects and conduct due diligence assessment
- To solicit and manage competitive bids from local consultants to prepare feasibility study for small hydropower development

2.2.4 Public Outreach

A key aspect of PSHDP-2 was to facilitate identify and develop means for effective involvement of all stakeholders in large scale development of hydropower in Nepal which is the single-largest under-developed resource of the country. Our activity in the area comprised extensive discussions with major stakeholders and government agencies to develop a public outreach program for GON to improve level of awareness and knowledge of stakeholders regarding hydropower development.

2.2.5 Social and environmental sustainability

Our efforts in this area comprised

- Development of user-friendly manuals to streamline practices and procedures for preparing Environmental Impact Assessments for hydropower projects consistent with international requirements and standards
- Assistance to improve GON capability to develop methodologies, criteria, and techniques to balance environmental, social, and economic constraints to effect better decision-making in hydropower development
- Assistance to GON to improve benefit sharing mechanisms

2.2.6 Training Support

A major effort was undertaken to provide focused training through domestic and international workshops, class-room training, participation in seminars and conferences, study tours, and peer exchange programs in the above areas for hands on experience for GON's decision makers, as well as technical and administrative staff.

The major focus of PSHDP-2 was to assist the DOED since DOED has been the most engaged in fostering private sector investment and has been heavily involved in formulating, developing, and implementing the mandates of GON's energy sector reform policies and specific project formulation. PSHDP-2 work scope also included providing technical assistance and training to the MOWR NEA, ETFC, and WECS as well as other stakeholders of the hydropower development in Nepal on specific areas.

2.3 Annual Work Plans

In compliance with Article C.10 of IRG's contract with USAID, IRG prepared an annual Work Plan with the full participation of USAID and the GON agencies. USAID's extended Strategic Objective Team (SOT) comprising relevant GON agencies (DOED, MOWR, WECS, NEA, and the Ministry of Finance) and USAID partners reviewed, modified as necessary, and approved the annual Work Plans. These Work Plans served as the primary management tool for setting direction, milestones, budgeting, and scheduling of activities for each year during the term of the contract. Copies of these annual work plans are provided in the CD enclosed with this report. Detailed work and deliverable schedules for specific activities were routinely prepared as required and approval obtained from DOED and USAID.

2.4 Progress Monitoring

Information flow, both within and among GON agencies, USAID, and IRG was critical and essential for the achievement of SO6. The following levels of non-administrative interchange were recognized as vital and followed throughout the contract period:

LEVEL 1: The first level interchange was the routine, frequently daily, contact between individuals including the DOED's Director General, DOED Project Coordinator, and key counterpart staff of DOED and other GON, the CTO of USAID; IRG's Chief of Party (COP),

Home Office Manager, and other IRG/N staff; and individual consultants as required. Communications were direct, by telephone, or through e-mail.

LEVEL 2: IRG internal and counterpart meetings were routinely conducted. Regular bi-monthly progress meetings were held among DOED, USAID, and IRG. As part of IRG’s effort to inform the partners and counterparts in a timely manner, IRG submitted key weekly activity lists for the USAID and monthly progress reports to DOED and USAID. As required under Article C.14, IRG prepared consolidated Six-Monthly Progress Reports to USAID, DOED, and uploaded these reports including CTO comments, thereon, on the USAID Development Experience Clearinghouse website.

LEVEL 3: Formal meetings with GON agencies and USAID officials were conducted on an as needed basis. Briefing and debriefing meetings with the DOED and USAID were conducted with every visiting short-term technical assistance (STTA) consultants.

LEVEL 4: The SOT consisting of representatives from DOED, USAID, MOWR, MOF, NEA, USAID and its partners, oversaw the project’s progress. The SOT met usually early in the year to discuss and approve the draft annual Work Plan prepared by IRG for the year. Additional SOT meetings were held during the year if substantive changes were required in the annual Work Plan and approval obtained.

The following charts present progress of PSHDP-2 activities by Contract Line Items (CLIN) over the five year project duration.

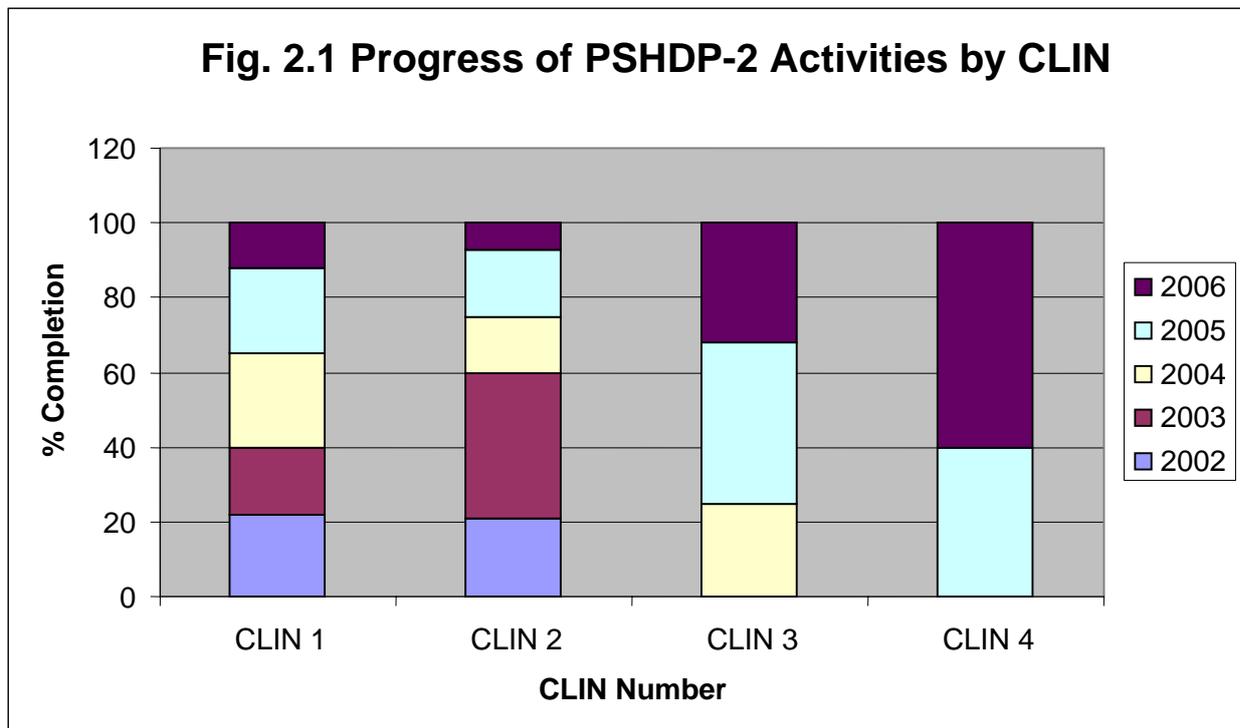


Fig 2.2 CLIN 001 Progress of Activities by Year

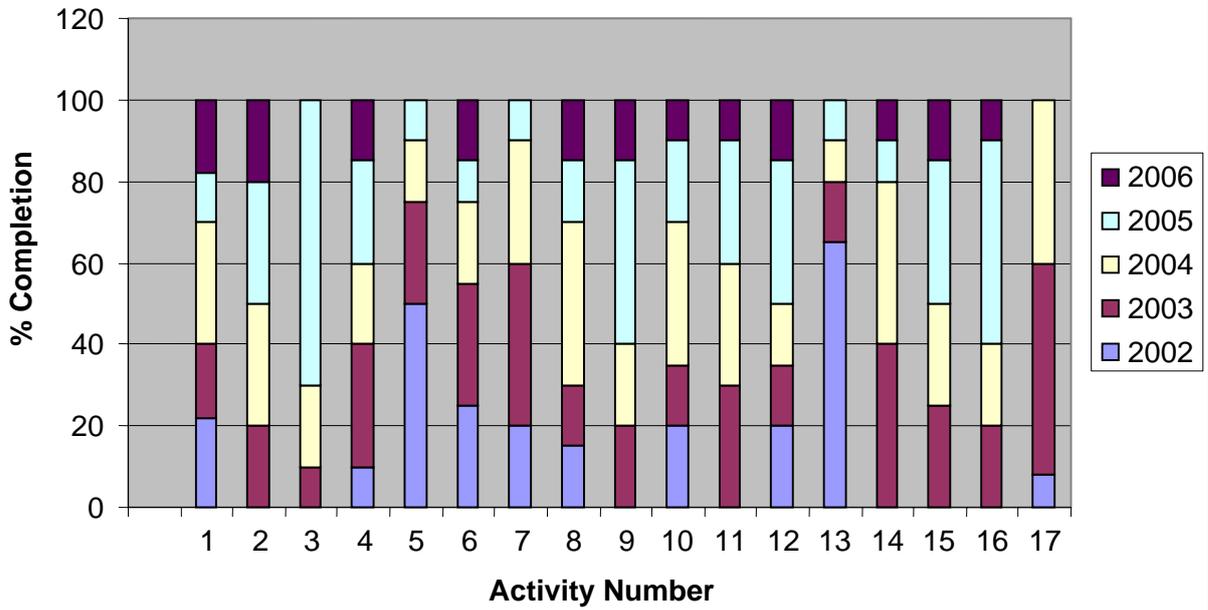
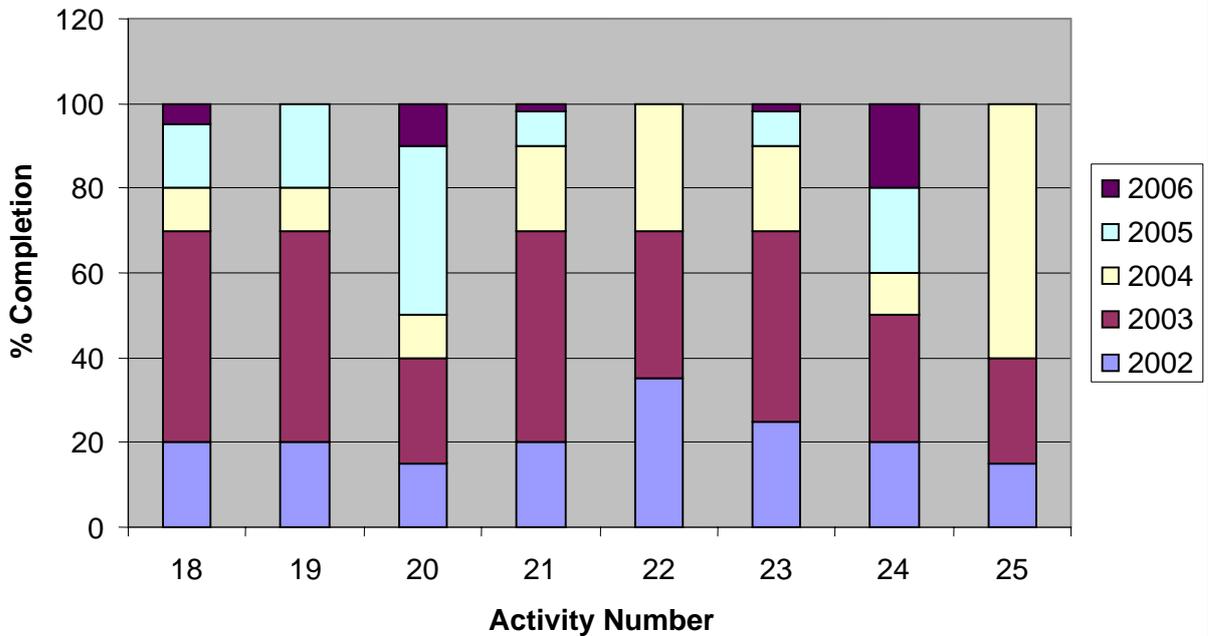


Fig 2.3 CLIN 002 Progress of Activities by Year



3.0 EXPECTED AND ACHIEVED RESULTS

The USAID established the following Intermediate Results (IRs) to demonstrate the achievement of the strategic objective:

- Improved enabling environment for equitable and sustainable hydropower development
- Strengthened environmental and social assessment procedures with broadened stakeholder participation

Primary and secondary indicators used to assess the IRs were:

Primary Indicators

Indicator IR 6.1 - Private financial commitments for hydropower projects, measured as cumulative investment amount in millions of US dollars

Indicator IR 6.2 - Number of private sector firms participating in projects one megawatt or greater

Secondary Indicators

Indicator IR 6.1.1 - Cumulative number of private sector projects progressing toward financial closure

Indicator IR 6.1.2 - Amount of royalties distributed to affected communities according to policy

Indicator IR 6.2.1 - Number of approved Environmental/Social Impact Assessments (EIA) for hydropower proposals that meet or exceed international guidelines

Indicator IR 6.2.2 - Number of public hearings for hydropower conducted with local stakeholders and affected communities

Indicator IR 6.2.3 - Number of professionals trained in reviewing EIAs

Table 3.1 provides details of performance indicators monitored under SO6.

Analysis of Results

The results indicate that PSHDP-2 achieved all target thresholds and significantly exceeded the thresholds in several key indicators. Local private interest and commitment to hydropower development was the key element of investment during the project term. These activities, along with applications for two small projects (<10 MW) for PDF funding and a bidder consortium led by a local investor for the 30 MW Kabeli project indicate committed local interest in hydropower investment despite political uncertainty. Unfortunately, no new projects with significant foreign investment were realized because of the volatile political situation of the country during 2001 and until the latter half of 2006.

Important are the very positive signals being made by the eight political parties on their commitment to hydropower development and Nepal's need for international assistance for such development in light of overwhelming interest of neighboring government and international private sector, evidenced by the following:

- The NEA and an Indian IPP, IL&FS Ltd, signed a Memorandum of Understanding in late 2006 to develop several cross-border transmission links between Nepal and India. It may be noted that the US Embassy in Nepal and USAID sponsored and IRG implemented a seminar titled POWERing Nepal – Connecting Markets in November 2006 to show-case PSHDP-2's Transmission Link Study which was well received by attending developers from the US, Norway, India, and Nepal.

- GON had invited competitive bids for the development of export-oriented Upper Karnali (300+ MW), Arun-3 (400+ MW), and Budhi Gandaki (600+ MW) hydro projects and 13 international private power developers had shown keen interest and submitted bids (January 2007). A technical committee appointed by the GON evaluated the bids and recommended in April 2007, the selection of one bidder (GMR Group of India) for the Upper Karnali and Arun-3 development. No bidder was recommended to develop the Budhi Gandaki project. With commitments from the governments of India and China for large investment in the sector along with the significant new interest shown by private sector from India, China, Norway, Canada, and the US, there is a good reason to be optimistic about overseas investment to develop Nepal's hydropower. The GON must act firmly and swiftly to reiterate its policies and procedures for large hydropower developments to meet its domestic demands and for exports to take advantage of the current interest and impetus from private and public sector entities.
- Four international consortia were pre-qualified to competitively bid for the development of the 30 MW Kabeli hydropower project. PSHDP-2 assisted the DOED and the GON to develop appropriate contract documents for the competitive bidding. Two bids were received in January 2007. The GON evaluated the bids and has sent the bid evaluation to WB for concurrence (May 2007). Both the bidders have requested for low-cost funding under the PDF. If the WB concurs with the GON evaluation, a contract for project development may be awarded by July 2007. Ridi Khola (2.8 MW) project has received a letter of intent from the PDF for financing. Handi Khola (2.5 MW) project has a conditional commitment for PDF funding.
- Khimti and Bhoté Koshi projects have continued to make investment on equipment upgrades and environmental mitigation efforts indicating their commitment for long-term investment in Nepal. BPC has made substantial (in excess of \$1million) investment in preparing the application for the upgrade of the Andhi Khola project from 5.1 MW to 12 MW. A power purchase agreement (PPA) is being negotiated with the NEA.
- The Snowy Mountain Engineering Corporation (SMEC), an IPP from Australia, received an extension for its conditional license to develop the 750 MW West Seti project, dedicated for power export to India. The SMEC has invested considerable sums of money on the West Seti project. West Seti has made statements in public that the expenditures for preparing the feasibility study and the EIA have been of the order of \$10-15M. Being the first of its kind, West Seti conducted extensive discussions with PTC India, the regulators, and others to negotiate a PPA (initialed in 2005) with the PTC, India. Our estimated costs for this effort are around \$5M. West Seti is reported to have concluded its negotiation for an EPC contract with a Chinese contractor/consortium after a significant world-wide search and negotiation process; also, significant project insurance arrangements have been completed in New York and China. The cost of such efforts conducted over several years is likely to be on the order of 10M. The total investment to date on the project is thus estimated at around \$30 M.

The ADB is reported to have agreed to provide a loan to the GON for equity investment in the project. Project construction is now (May 2007) expected to start early in 2008.

Table 3.1: Performance Data Table – SO6*

SO or IR	Results Statement	Indicator	Unit of Measure	Dis-aggregation	Baseline Year	Baseline Value	2002 Target	2002 Actual	2003 Target	2003 Actual	2004 Target	2004 Actual	2005 Target	2005 Actual	2006 Target	2006 Actual	Target Status
SO6 IR 6.1	Increased private sector participation in environmentally and socially sustainable hydropower development	Private financial commitments for hydropower projects	Millions of US Dollars		2001	323	327	348	335	360	355	378	400	390	445	445	Exceeded
							4	25	8	12	20	18	45	12	45	56	Exceeded
SO6 IR 6.1.1	Improved enabling environment for equitable and sustainable hydropower development	Private sector projects progressing towards financial closure	Cumulative total number of projects that have passed important stages toward completion of a private hydro power project	Stage 1**	2001	24	26	28	30	42	35	68	40	95	45	116	Exceeded
						6	7	8	8	10	10	13	12	15	14	16	Exceeded
						6	7	6	8	14	10	20	12	25	14	30	Exceeded
						6	7	8	8	9	10	12	12	14	14	15	Exceeded
SO6 IR 6.1.2	Improved enabling environment for equitable and sustainable hydropower development	Royalties distributed to affected communities according to policy	\$ Equivalent and % of royalties transferred to DDCs.		2001	95,522	125,400	167,284	133,000	293,390	151,400	372,007	164,000	1,472,723	177,000	2,171,150***	Exceeded several times over
							10%	10%	10%	10%	10%	Varies	10%	Varies	10%	Varies	

* SO6 Performance baseline and targets established by USAID on 2/22/2002

** Stage 1: Survey license issued (excluding projects studied by DOED)

Stage 2: Generation license issued

Stage 3: Completion of studies

Stage 4: Financial closure/Power Agreement

***From January to September 2006 the IPPs remitted a sum of \$698,427.00 to DOED; this has included some payments due in 2005. No information from DOED is available on distribution to the affected regions, districts and communities

Table 3.1: Performance Data Table – SO6 (Continued)

SO or IR	Results Statement	Indicator	Unit of Measure	Dis-aggregation	Baseline Year	Baseline Value	2002 Target	2002 Actual	2003 Target	2003 Actual	2004 Target	2004 Actual	2005 Target	2005 Actual	2006 Target	2006 Actual	Target status
SO6 IR 6.2	Increased private sector participation in environmentally and socially sustainable hydropower development	Number of private sector firms participating in projects of one megawatt or greater	Number of firms	Redundant (Stage 1 of IR 6.1.1)	2001												
SO6 IR 6.2.1	Strengthened environmental and social assessment procedures, with broadened stakeholder participation	Number of approved environmental/ social impact assessments for hydropower proposals that meet or exceed international guidelines	Number of EIAs/ SIAs complying with guidelines *		2001	7	8	10	10	21	12	27	14	34	16	37	Exceeded
							1	3	2	11	2	6	2	7	2	3	
SO6 IR 6.2.2	Strengthened environmental and social assessment procedures, with broadened stakeholder participation	Public hearings for hydropower conducted with local stakeholders and affected communities	Number of hearings		2001	17	19	18	21	24	25	30	31	36	37	40	Exceeded
						2	1	2	6	4	6	6	6	6	4		
SO6 IR 6.2.3	Strengthened environmental and social assessment procedures, with broadened stakeholder participation	Number of professionals trained in reviewing environmental/ social impact assessments	Number of people trained.	2001	107	117	145	127	210	147	236	167	260	187	282	Exceeded	
						10	38	10	65	20	26	20	24	20	22		

* The number includes Initial Environmental Examinations (IEEs) prepared for hydro projects since IEEs are the only required environmental documentation for certain developments

4.0 TECHNICAL AND TRAINING ACTIVITIES AND ACHIEVEMENTS

This section lists key activities and accomplishments of PSHDP-2 in various areas of technical assistance and training provided to GON agencies and other stakeholders. Lists of specific outputs produced by the Project each year during the project term and technical presentations made are provided in Appendix 2. Project outputs and the presentations are included in the CD enclosed with this report.

4.1 Power Sector Reform, Policy, Legal, Regulatory, and Institutional Strengthening

4.1.1 Power Sector reform

Following the mandates of the HDP 2001, PSHDP-2 conducted extensive discussions with the GON agencies and other stakeholders to identify the need for reform of the power sector with particular emphasize to strengthen DOED and the ETFC and to establish and strengthen an independent Regulatory Commission (NERC). Our activities and accomplishments listed below:

- Developed concepts for sector reform during 2003 in discussion with MOWR, DOED, and WECS and finalized the concepts with the GON decision-makers in September and December 2003
- Developed preliminary roadmaps for DOED and ETFC strengthening and formation and implementation of NERC developed in 2003-04

In 2004, ADB consultants prepared a formal Power Sector Roadmap in 2004 with emphasis on reform and unbundling of the NEA and confirmed PSHDP-2's roadmaps for the establishing the NERC and for strengthening DOED and the NERC, when formed

- Developed initial drafts of the new Electricity Act and NERC Act in 2004-05 in close coordination with MOWR, DOED, and WECS
- Conducted the first-ever Stakeholder meeting of MOWR to discuss the draft Acts in April 2005
- Completed refinement of the draft Acts in consultation with expert committees formed by the GON and prepared enabling regulations for the Acts in 2005-06; submitted final drafts to the MOWR for discussion with the Cabinet for legislation in early 2006
- Prepared Implementation Plans for NERC and DOED reform and strengthening based on the proposed Acts in 2005 and finalized in early 2006

Because of political disturbances the two Acts could not be legislated by the Cabinet in early 2006. The new democratic government which came to power in April 2006 requested the MOWR to review the draft Acts and submit to the Cabinet for further action. The MOWR is committed to the reform of the sector and has submitted the draft Acts to the government for legislation. The MOLJ has completed its review of the draft Acts which are now with the Cabinet for legislation. It is expected that the Acts would be legislated late 2007.

At the request of the MOWR, PSHDP provided the following assistance to other key power sector agencies:

- Prepared a Charter for the NEA's Board of Directors which would be independent of the MOWR
- Reviewed and provided comments to the NEA on its internal performance contracts as part of transforming its integrated Generation, Transmission, Distribution, and Services units reform to become independent profit centers

- Advised ETFC on specific regulatory issues such as NEA's conflict of interest in developing joint venture projects with IPPs, transitional issues with the formation of NERC
- Conducted seminars on how NERC will change institutional relationships among MOWR/WECS/NEA/DOED/IPP
- Provided training on international regulatory perspective with out-of country training, study tour to five Indian states that has recently undergone regulatory reform
- Developed outline plans for reform of WECS to meet its mandates under the HDP 2001 and the reformed power sector

4.2 Power Marketing and Cross-border power trade

Since the NEA is the only entity currently involved in any power trade in Nepal, IRG discussed with key NEA staff and prepared a report in October 2003 on surplus energy available in the NEA system, particularly during the wet season, for potential sale to India. IRG prepared a detailed analysis of Indian and Nepali electricity markets and the legal and regulatory environment in India following the Indian Electricity Act of 2003 and a report on the opportunities and challenges to Nepali power export. After extensive discussions with the Indian Regulators and the PTC of India, IRG prepared long-term and short-term strategies for NEA for power export to India. PSHDP-2 reviewed NEA's grid-code and provided suggestions and comments to enhance the document for possible adoption by the NERC, when formed. PSHDP-2 also provided training for NEA, DOED, and WECS engineers on the use and interpretation of Wien Automatic System Planning model used by the NEA.

The HDP 2001 suggests that DOED become the custodian for Nepal's hydropower development in the nation's interest. In order to facilitate such action, IRG assisted DOED and MOWR to draft key provisions for power export in the new Electricity Act and incorporated numerous actions including proposal to establish a separate Electricity Promotion Division and a One-Window Services Division in DOED to strengthen it to fulfill its mandates under the HDP 2001. IRG prepared a report to the DOED to focus on streamlining one-window operation in consultation with the Independent Power Producers Association of Nepal (IPPAN) and prepared a brochure in Nepali and English to assist international and national IPPs through the licensing procedures for developing hydro projects in Nepal.

In 2005, USAID/N requested PSHDP-2 to initiate a major effort to study possible alternatives for Nepal-India transmission line (TL) links and to identify potential legal, regulatory, market, technical, and economic issues in implementation of the preferred TL link issues. IRG conducted the following key activities:

- Conducted stakeholder meeting in Nepal in November 2005 attended by IPPAN, MOWR, WECS, DOED, NEA, ETFC
- Conducted meetings with the Ministry of Power of the Government of India, PowerGrid Corporation of India, PTC Limited, IPP association of India, and major private developers such as TATAs and Reliance in October 2005
- Prepared a draft report in June 2006 which was reviewed and accepted by the NEA, DOED, and other GON agencies
- Organized and conducted in November 2006 an international seminar titled POWERing Nepal – Connecting Markets funded by the US Embassy/N and PSHDP-2; the seminar was attended by IPPs from India, China, Nepal, Europe, and the US
- Submitted a final report to the USAID and GOIN agencies in December 2006 that confirmed significant private sector interest from Nepal, India, and the US and the technical and economic feasibility of a TL link on the basis of export of surplus wet season energy alone through public-private partnership or private investment mechanisms

4.3 Project development and financing

IRG assisted DOED and GON agencies to conclude the establishment of WB's \$35 million PDF to provide low cost loans for private sector hydropower projects through the following activities:

- Preparing an Operational Manual for Environmental Impact Assessment for projects financed under the PDF
- Assisting DOED to evaluate proposals and select a PDF Administrator\
- Assisting DOED and MOWR to negotiate a contract with the selector PDF Administrator
- Assisting DOED and the MOWR to set up and initiate functioning of a PDF Board
- Assisting DOED to review and finalize Operation and Risk Management Manual and Financial Management Systems prepared by the PDF Administrator

IRG revised the Request for Qualifications (RFQ) prepared under the previous assistance program (PSHDP-1) to pre-qualify IPPs to competitively bid for the development 30 MW Kabeli-A project under a Build, Own, Operate, and Transfer (BOOT) mechanism. IRG substantially revised the Request for Proposal (RFP) and model Project Development Agreement for the bidders and reviewed and commented on NEA's model Power Purchase Agreement for the project development. IRG assisted DOED and the MOWR to conduct the first pre-bid meeting for competitive development of a hydro project in Nepal in November 2006. Two proposals were received in January 2007; IRG provided informal assistance to evaluate the proposals. GON has submitted the evaluation of the proposals to the WB for concurrence. Both the bidders have requested for PDF funding for the project. A favorable assessment of the proposals is expected from the WB in June 2007 with a possible award for development made soon thereafter.

In order to build up a portfolio of small hydropower projects for competitive development by the private sector, USAID and the DOED tasked IRG with competitively procuring and managing local consulting services to conduct feasibility studies and prepare EIAs for the 14 MW Khare Khola and 5 MW Maya Khola projects. The DOED was intimately involved in developing the scope of work for the studies. A key focus on the study was to prepare an optimal project design based on long-term TL system expansion without restriction to meet only current TL or other system requirements. This factor resulted in the proposed installed capacity of 14 MW for the Khare Khola project instead of a lower 6-8 MW capacity, if the project were designed with existing TL constraints in place. IRG instituted an open and transparent process for selection of the consultants and assisted the consultants with expedited GON review process.

4.4 Public Outreach Program

Discussions with GON agencies and other stakeholders suggested that a Public Outreach Program (POP) should be developed to disseminate accurate, relevant, and timely information on all aspects of hydropower development and the electricity sector. IRG developed a draft POP comprising a program to educate stakeholders on key aspects of hydropower development identified during a stakeholder meeting in 2004. IRG conducted a nation-wide survey of over 800 stakeholder representatives in 2005 to assess the level of stakeholder Knowledge, Awareness, Perception, the adequacy and effectiveness of key messages developed in the draft POP and the most effective mode of dissemination of information. Overwhelming majority of the public (greater than 80 percent of respondents) believe that hydropower is essential for the development of rural Nepal. Eighty two percent believe that the pace of hydropower development is slow and agree that hydropower exports would form a significant source of national income for improving economic and social conditions of the citizens. A final Public Outreach program was prepared and submitted to the DOED in December 2006.

IRG initiated simultaneous efforts to improve and upgrade DOED's Document Center to an operational Public Information Center (PIC) that would be a focal point for collecting and

disseminating relevant information on the sector. Over 500 reports, documents, and publications were collected and organized in the PIC with its own reading room and internet connectivity. The PIC is designed as a one-stop reference of MOWR, WECS, NEA, DOED libraries. IRG also upgraded the DOED website to content management site and trained DOED staff to operate, maintain, and upgrade the site as needed.

4.5 Social and environmental sustainability

IRG prepared the following manuals to improve the quality and standards of environmental documentation for hydropower development required by Nepali laws:

- Preparing Environmental Management Plan for hydropower projects, 2002
- Developing and Reviewing Water Quality Monitoring Plans and Results for hydropower projects, 2002
- Conducting Public Hearing in Environmental Impacts Assessment Process for hydropower development, 2005
- Addressing Gender Issues in preparing EIA/IEE s for hydropower projects, 2005
- Preparing Baseline Information, Impact Analysis and Mitigation Measures for EIA 06

IRG analyzed the results of current methods for distribution of royalties received by the GON and local governments from every hydropower development with an installed capacity greater than 1,000 kW. IRG assessed the actual distribution and use of the royalty monies and developed a set of recommendations for improving the existing system for more equitable sharing of the benefits.

4.6 Infrastructure improvements

Besides procuring a number of hardware and software for the DOED and GON agencies to improve operational and administrative functions (Section 7), PSHDP-2 supported the agencies in a number of activities to enhance their capability in management:

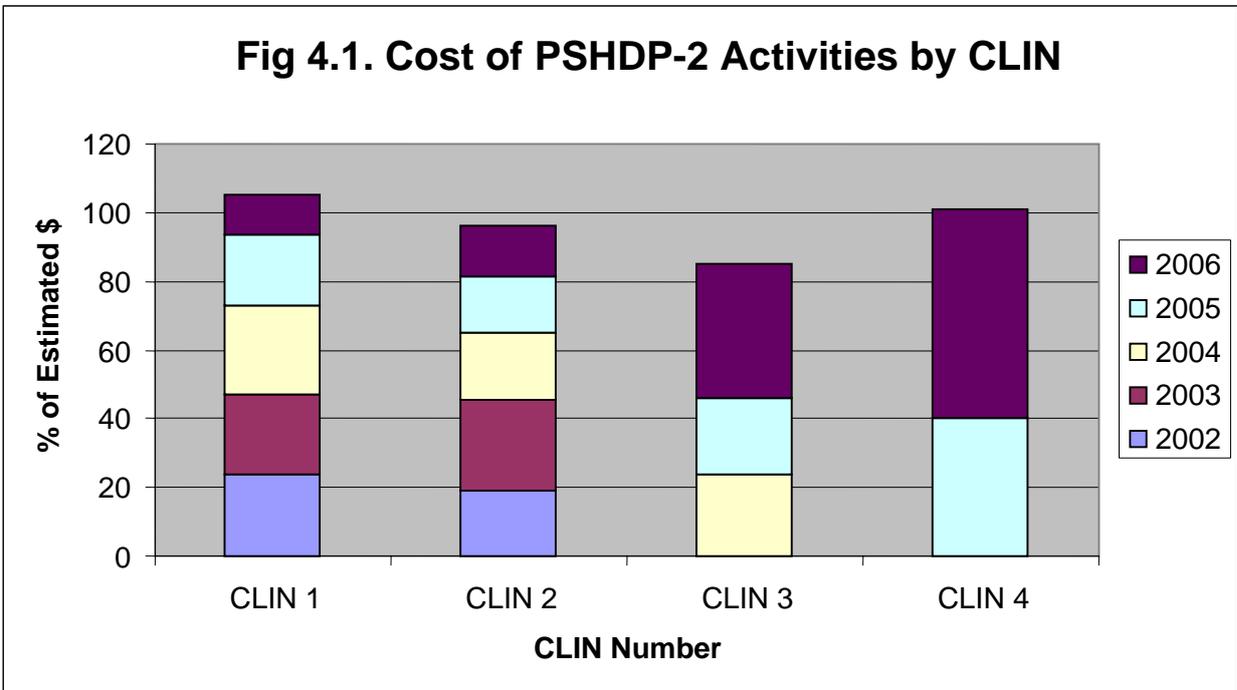
- Over 50 presentations in focused technical and professional forums/seminars/stakeholder meetings
- Active participation with Nepali delegations in executive exchange programs, training events, and regulatory study tours
- Participation in conferences and hydro marketing events organized by the GON agencies, USAID and its Partners, IPPAN, Nepal Hydro Association, and others
- Assistance to DOED/MOWR/GON leadership through preparation of presentations, hand-outs, and speeches for delivery at national and international forums
- Publication of Newspaper articles and interviews

4.7 Cost of PSHDP-2 Efforts

Following tables present the expenditures of PSHDP-2 on an annual basis. Approximately 50 percent of the expenditures were incurred directly in Nepal or incurred in providing training to GON staff.

Table 4.1: Cost of PSHDP -2 Activities by CLIN and Year

CLIN No	Total Budget \$ 000s	Actual 2002 000s	Actual 2003 000s	Actual 2004 000s	Actual 2005 000s	Estimated 2006 000s
001	2,981.2	600	702	768	690	348
002	2,218.9	432	571	443	354	319
003	245.4	0	0	31	82	91
004	252.2	0	0	0	106	121
TOTAL	5,697.7	1,032	1,273	1,262	1,232	879



5.0 TRAINING ACTIVITIES

A major aspect of building local capacity in power sector functions was to identify the need and provide appropriate training to GON staff and other stakeholders. PSHDP-2 organized 24 out-of-country training events in the U.S., Canada, Portugal, Austria, Croatia, Turkey, India, the Philippines, PDR Lao, Thailand, China, Malaysia, Japan, and Australia. These events for the GON staff and officers included technical and management courses, seminars and conferences, study tours and peer exchanges as well as class-room training. IRG also organized 44 in-country training events for GON staff and other stakeholders over the five year period.

In carrying its work, IRG worked closely with DOED, MOWR, WECS, ETFC and the NEA. IRG coordinated its efforts with other GON agencies such as the Ministry of Environment, Science, and technology, Ministry of Local Government, the Ministry of Law and Justice, the MOF, the National Planning Commission, and the Office of the Prime Minister; donor agencies including Norwegian Agency for Development Cooperation and Japanese Bank for International Cooperation; MFIs; and other major stakeholders in power development including the IPPAN and the Federation of Nepalese Chambers of Commerce and Industry; and other implementing partners of the USAID energy program in Nepal.

Table 6.1 Summary of Training Events

Field of Training	No. of Events organized	No. of GON staff attended	Location
Technical and Management courses – class room training	11	31	Out-of-country
Study tours, peer exchange programs	10	40	Out-of-country
Seminars and conferences	3	20	Out-of-country
Technical and Management courses – class room training	14	100	In-country
Peer exchange programs, workshops and site visits	8	250	In-country
Seminars and conferences	22	390	In-country

A majority of the training participants (over 60 percent) continue with respective GON's power sector agencies and utilize their training productively. Table 6.1 summarizes details of PSHDP-2 accomplishments. Figures 6.1 and 6.2 show graphically overseas training capability retained within GON agencies.

Direct cost of training amounted to \$750,000. List of in-country and out-of-country training events organized by the project are presented in Appendix 3. Training database detailing training event and participant information is included in the enclosed CD.

Figure 6.1 – Overseas Training Capability (by event)

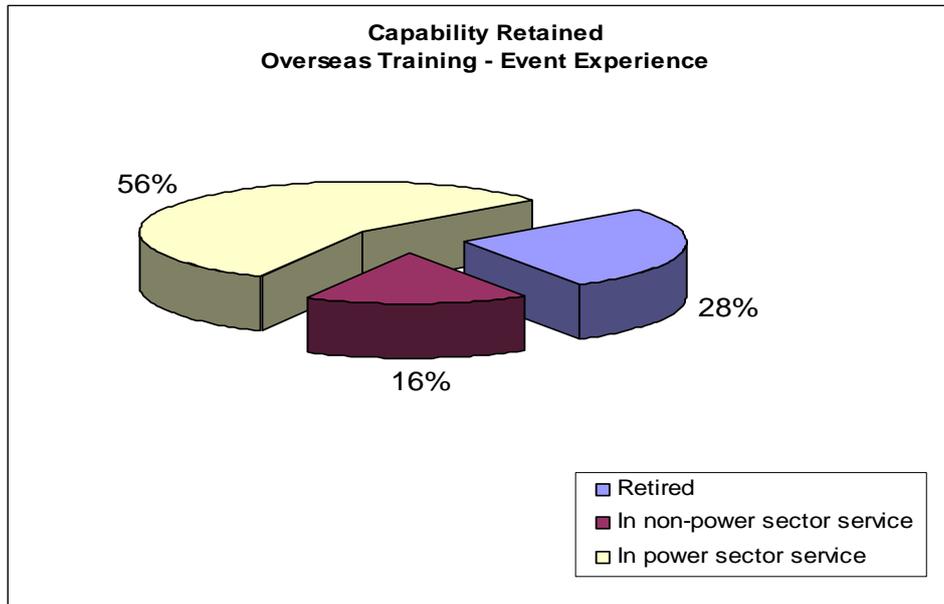
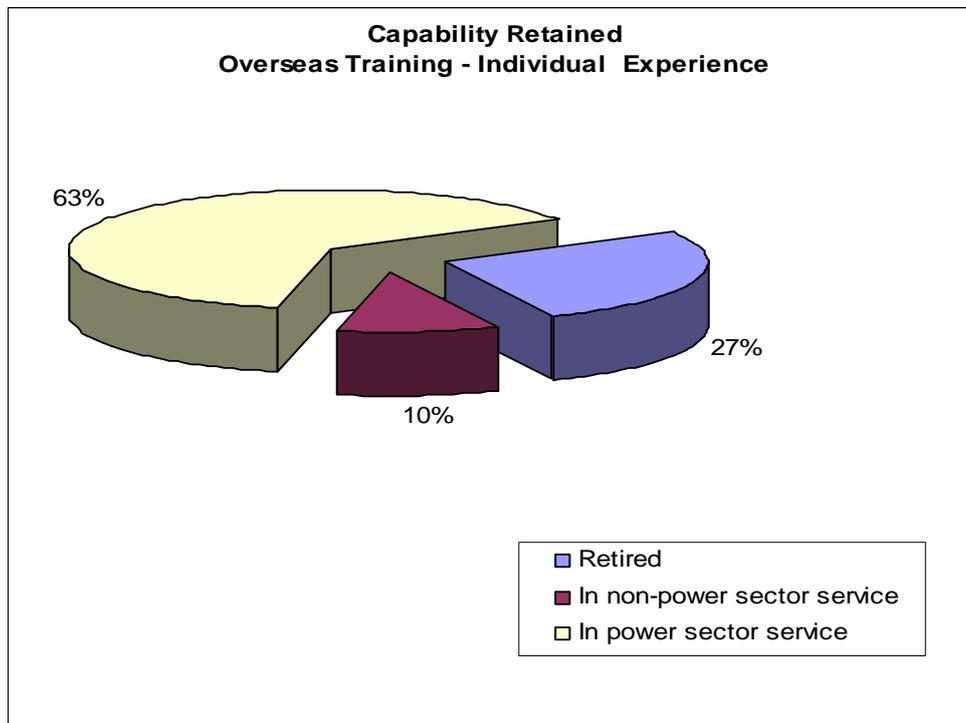


Figure 6.2 – Overseas Training Capability (by individual)



6.0 PROJECT STAFFING

The project started with long-term, expatriate, resident COP and Deputy Chief of Party (DCOP). In addition to overall project performance, the COP was the technical lead for Policy, Legal, Regulatory, and Institutional Strengthening; Power Marketing; Project Financing activities; and Training Support (IR 6.1). The COP was supported by IRG's Home Office Manager who coordinated STTA and IRG senior management interface. The DCOP was specifically responsible for Public Outreach and Environmental and Social Impact Assessments (IR 6.2). This position was converted to a domestic staff position in mid-2004 to facilitate transfer and sustainability of environmental management skills and know-how to local staff. IRG/N staff during the project term included the following:

G. Krish Krishnan, P.E	Chief of Party (Aug 2002 - Dec 2006)
Leeu Wang	Chief of Party (Mar 2002 - May 2002)
Leo Polivka	Chief of Party (Dec 2001 - Mar 2002)
Charles Moseley	Home Office Manager (Dec 2001- Feb 2004)
Dr. Charles Ebinger	Home Office Manager (Dec 2004 - Dec 2006)
Dr. Stefan Gorzula	DCOP/Senior Environmental Advisor (Dec 2001 - Jun 2004)
Dr. Janak Lal Karmacharya	Senior Technical Advisor (Dec 2001 - Jun 2002)
Dr. Rabin Shrestha	Senior Technical Advisor (Jun 2002 - Jun 2005)
Ms. Nilu Puri Basnyat	Environmental Manager (Jul 2004 - Dec 2006)
C. B. Lamichhane	Project Administrator (Dec 2001 - May 2003)
Ms. Rajya Laxmi Bajracharya	Project Administrator (Jun 2003 - Dec 2006)
Ram Raj Acharya	IT Officer/Manager (Dec 2001 - Dec 2006)
Surendra Khadka	Training and Public Relations Officer (Dec 2001 - Sep 2006)
Ms. Rakita Singh	Environmental Coordinator (Sep 2003 - Sep 2006)

Domestic support staff included two drivers and two office assistants.

In addition to technical assistance and support provided by long-term expatriate staff, IRG facilitated targeted STTA through 16 international consultants and experts and five (5) home office staff who provided over 750 days of effort in Nepal in policy, regulatory, institutional, power trade, engineering, legal, financing, contracting, rural electrification, transmission studies, and public outreach. Four local consultants provided an additional 500 days of focused effort in legal and environmental areas.

IRG's team initially included two domestic subcontractors to assist IRG team with various activities. Subsequently, IRG subcontracted with three more local companies for specific work activities. Total direct cost of local subcontract work exceeded \$420,000.

Appendix 4 lists IRG's STTA specialists and subcontractor support provided to the GON agencies and other stakeholders over the five year period.

7.0 ADMINISTRATIVE SUPPORT ACTIVITIES

As part of building capacity in DOED and GON agencies, PSHDP-2 procured a number of targeted non-perishable commodities for DOED and GON agencies. In addition, all such usable commodities purchased for use by IRG project staff was also handed over to DOED at the end of the contract. In addition, usable commodities that were handed over to PSHDP-2 from previous USAID projects (PEP and PSHDP-1) were given to DOED during the course of the contract. Major items handed over to DOED and GON agencies included:

Vehicles (New)	6 (2 sedans, 1 Jeep, 3 motor cycles)
Vehicles (Used)	2 (1 sedan, 1 Jeep)
Computers (New)	30
Computers (Used)	10
Computer Networks	2
Network Server	1
Electrical inspection equipment	1 set
Xerox Copiers (New)	2
Xerox Copiers (Used)	2
Books, publications (New)	120
Miscellaneous office equipment, furniture (Telephone PBX, fax machines, scanners, Mobile phones etc)	(New and used)
Direct procurement expenditure	\$175,000

In addition to the above procurement, IRG transferred to the DOED a variety of office equipment, instruments, books, reports, and miscellaneous office supplies handed down to PSHDP-2 from USAID's PSHDP-1 and the PEP contracts. A list of items transferred to DOED and other GON agencies is provided in Appendix 5.

IRG provided technology support to the DOED and other GON agencies through -

- Provision, management, and maintenance of two Local Area Networks, and databases
- Provision and support of hardware, software, and multi-media
- Provision and maintenance of 40 E-mail addresses and high-speed internet services
- Development of content-management DOED website and training of DOED staff to manage, update, and upgrade the website and
- Training DOED staff in Network operations

IRG streamlined its internal procurement process for goods and services, developed procedures for seamless integration of IRG/N and IRG/W accounting and streamlined procedures for local and overseas training events in compliance with IRG/W policies and USAID/DCAA requirements. Relevant DOED staff were actively involved in the implementation of our procurement and training activities.

8.0 CONCLUSIONS

Because of continued insurgency during much of the contract period and relatively frequent government changes, general progress in several areas remained slow or elusive while strong but visible progress were seen in others. During the five-year contract period, the Ministry of Water Resources saw five Ministers, four Secretaries, and the DOED had three Director Generals. Several promising developments have taken place since May 2006 after the Parliament was reinstated. Our key conclusions are listed below:

Status of Power Sector in Nepal

Positive factors

- Investment in operating projects (including BPC) \$416 M
- Investment in on-going major project studies and licensing \$30 M
- Annual Royalty Revenue to DDCs (2006) \$2.0 M
- Annual Royalty Revenue to GON (2006) \$2.0 M
- Cumulative Royalty revenue to District Development Councils from private sector projects to Dec 2006 \$2.2 M

- Considerable progress has been made on West Seti project with construction Expected to start in 2008
- Competitive bidding for the Kabeli project is likely to set a (lower) benchmark for power purchase price from IPP projects

Negative factors

- Power shortages and rolling-blackouts persist and are more acute
- Electricity price to consumer is still high
- No significant overseas investment in hydropower has materialized
- HDP 2001 not yet supported by enabling law
- New Electricity and NERC Acts not yet passed i.e. no progress in needed reforms such as formation of NERC and unbundling of NEA and No level playing field for private sector investment, yet

Promising developments

- New private sector investments (mostly domestic) on the order of \$100 million in small hydro in the last 5 years despite insurgency
- New Parliament and peace agreement with the insurgents achieved
- GON commitment for equity investment in West Seti (with ADB loan) similar to that of Lao PDR in Nam Theun 2 project
- GON competitively bid the Kabeli project development; award is expected shortly
- Promise of \$5 B in power projects and \$300 M in transmission lines on the horizon with significant interest from regional and international developers
- Memorandum of Understanding between NEA and an Indian infrastructure development company for the construction of several transmission line links between Nepal and India
- GON received proposals from 13 international consortia for the development of three projects 1,300 MW
- Private Sector interest in large new projects (700 MW) \$1,500M
- Transmission lines \$300M
- Potential annual royalty income \$100M

Domestic Capabilities

DOED is now

- Focused on large and small hydropower development with national interest
- Confident of goals; independent approach
- Capable of making difficult decisions
- Better equipped to carry out routine and some enhanced responsibilities
- Competitive licensing, development, and procurement process in place for small and large projects

Other GON agencies

- MOWR is now committed to sector reform, power export, and competitive hydro development but political will remains to be seen
- NERC Act and new Electricity Act are ready for presentation to the Cabinet
- MOWR is committed to form NERC
- NEA is focused on domestic market needs and export of surplus power

Stakeholders are now

- Active and committed industry association in IPPAN
- Knowledgeable stakeholders committed to make useful and timely input for environmentally and socially sustainable hydropower development
- High international IPP interest for hydro development in Nepal

9.0 LESSONS LEARNED

Based on feedback from GON agencies, IPPs, and other stakeholders as well as from media interactions, it is clear that

- Appropriate TA and capacity building has helped Nepal to a measurable extent in the power sector
- More TA is required now in specific areas such as support to the NERC when formed, contract negotiations for project development, cross-border trade, and cross-border transmission links
- Mandates of regional programs such as SARI/E do not lend themselves to focus assistance where it is needed urgently and does not replace a bilateral program

Specific lessons learned in areas of stakeholder awareness of hydropower development, GON leadership and professional motivation and sustainability of GON staff are listed below:

Hydropower in Nepal

- 80 percent representative stakeholders including the general public in Nepal want judicious and accelerated hydro development to provide economic growth and job opportunities
- Raising revenue from hydropower exports represents the only **significant and self-sustaining** means to generate **new funds** to alleviate poverty and transform Nepal's social and economic system (for schools, health care, infra-structure, empowering minorities)
- Large scale hydropower export revenue offers a **significant opportunity to Nepal** to leverage the enormous donor-community goodwill to utilize the resources **as Nepal deems fit**
- GON has made strong commitments to develop hydropower in the country and it appears that the current political climate will likely lead to substantial hydropower development

MOWR Leadership

- Focus and continuity of MOWR leadership needed in the following major initiatives:
 - Legislation of new Electricity and NERC Acts
 - Commitment and follow through with timely decisions to develop large hydropower for domestic market and export
 - Commitment to establish and support a functional NERC on an accelerated schedule to take advantage of the enormous international investor interest in Nepal's hydropower development
 - Commitment to support the DOED, WECS, and the NEA in appropriate manner following established road maps for power sector reform
 - Commit to provide clear custodianship of hydropower development to be with DOED; current status compromises national economic development objectives
 - Commitment to increase capability of DOED and the WECS to ensure the best possible river basin development
- Focused assistance to key agencies for individual major initiatives/tasks - e.g.
 - NERC Act, implementation plan - NERC
 - National Transmission Grid – planning and implementation – Nepal Grid Company
 - Generation planning review unit - DOED
- A lack of representative stakeholder steering committee(s) to advise on sector-wide reform efforts, royalty distribution – need commitment and leadership at ministerial level
- Policy and sector development consultant offices should be in MOWR or outside GON offices for effective assistance to all agencies

Professional Motivation and Sustainability of GON Staff

- Succession planning and maintenance of key capabilities and staff in GON agencies is difficult – needs MOWR commitment to streamline/focus donor support for management
- Training, particularly overseas training, to be more focused to appropriate mid- and junior level staff
- Need for more and direct assistance/intervention from US Government and the donor community direct to get key elements of HDP 2001 implemented in an accelerated manner (e.g. NERC and new Electricity Acts; cross-border trade opportunities)

10.0 RECOMMENDATIONS

Nepal's hydropower is now on the world stage in the context of post-conflict recovery/development and climate change issue. That the international investor community has shown significant interest in the development particularly in the context of power export to India, it is essential that USAID and the US Government should stay engaged in Nepal's hydropower sector and provide continued assistance to the government agencies and private sector entities such as the IPPAN. Specifically, IRG recommends that USAID should increase support to hydropower development; NOT pull out of the sector:

- Key actions deserving immediate USAID support
 - Establish generation planning unit in DOED
 - Initiate energy planning for Nepal using “Think-tank” approach (e.g. Tribhuvan University)
 - Assist with implementing TL interconnection link with India
 - Assist with Kabeli project contract negotiations

- Future objectives for USAID assistance to spur economic growth through hydropower development
 - Assist with passage of EA and NERC acts
 - Assist with NERC establishment and implementation of PSHDP-2 plan to strengthen NERC to function effectively
 - Assist with PSHDP-2 plan to strengthen DOED to perform mandates of hydropower development policy
 - Implement public outreach program
 - Assist MOWR with unbundling of NEA and commercialization of its units
 - Establish Loan credit guarantees (e.g. General Development Agreements)
 - Continue capacity building and institutional strengthening in targeted areas

APPENDICES

Appendix 1 - PSHDP-2 Contract Activities

CLIN 001 Improved enabling environment for equitable and sustainable hydropower development

1. Support policy, legal, and regulatory reform and strengthen key institutions
2. Facilitate policy dialogue between GON and civil society groups
3. Technical support to the DOED on one or more export projects
4. Technical support to improve the "one window" mechanism
5. Assist DOED in implementing the WB's PDF
6. Improve DOED capacity
7. Identify Issues and Constraints to Power trade under Power Trade Agreement with India
8. Assist DOED in developing and analyzing project proposals, RFQs and RFPs from the financial perspective
9. Study and Review of Nepal's finance sector to promote domestic investment in hydropower
10. Improve public awareness and participation in private hydropower development
11. Improve transparency of local revenue sharing of hydropower benefits
12. Build outreach and education programs to increase public support through information
13. Training Activities - Perform training needs assessment for DOED and key institutions, complementary to SARI/E training program
14. Training Activities - Build Nepalese capacity for regional energy development and trade
15. Training Activities - Train DOED and GON staff on IPPs and power trade negotiations (Financial issues)
16. Training Activities - Executive exchange to promote energy reform consensus
17. Training Activities - Study tours to Indian States to learn from successful sector reforms

CLIN 002- Strengthened environmental and social assessment procedures with broadened stakeholder participation

18. Train/assist relevant GON agencies in EIA/SIA procedures and public consultations
19. Improve public hearings and documentation of stakeholder concerns
20. Advance impact monitoring and evaluation of benefits and equity issues
21. Develop and strengthen EIA/SIA capacity for mitigation, implementation and monitoring
22. Develop standards for accrediting EIA/SIA Professionals
23. Develop capacity for EIA/SIAs at or above WB or IUCN standards
24. Train public on disclosure and public consultation concerning EIA/SIA
25. Facilitate regional info exchange to resolve key issues
26. Specific Technical studies

CLIN 003- Feasibility Studies and EIAs for Small Hydropower Projects**

- 26A. Feasibility Study and Environmental Assessments for Khare Khola and Maya Khola small hydropower projects

CLIN 004 – Transmission Line Study***

- 26B. Nepal-India Transmission Link Study

* These activities support CLIN 001 and CLIN 002

** Started April 2004 USAID has decided to terminate this activity with only two of the up to five feasibility studies.

*** Started Oct 2005

Appendix 2 - Lists of PSHDP-2 Outputs

List of outputs 2002

S.N	Outputs
1	Workplan for the Year 2002
2	IRG comments on the proposed Corporate Structure of NEA, January 2002
3	WB PDP- PDF Component Project Implementaion Plan, June, 2002
4	Concept Papers on Gender Participation, June 2002
5	List of EIA Practitioners in Nepal, June 2002
6	History of EIA in Nepal Prepared for SARI/E, June 2002
7	Databases of Women Engineers and Kathmandu based Women NGOs, July 2002
8	Revised comments on NEA - Performance Contract, September 2002
9	A report on Study on Utilization of Surplus Energy, September 2002
10	Needs analysis and Training Plan, September 2002
11	Summary of EIA Process Prepared for Asian Development Bank, October 2002
12	Workshop on Gender participation in Hydropower Development Projects- Program, Speech, Presentaion and Photographs, November 2002
13	Manual for Preparing Environmental Management Plans for Hydropower Projects (published),
14	Concept Paper on Certification of Environmental Assessment Practioners, November 2002
15	Draft Operational Manual of Environmental and Social Impact Assessment for Sub-projects Financed under the Power Development Project, November, 2002
16	National Grid Code of Nepal (Preliminary Draft), November 2002
17	Workshop on Public Hearings for Hydropower Development Projects - Program, Speech, Presentation and Photographs, December 2002
18	Firms Carrying out EIA studies for Hydropower Projects since July 1998, December 2002
19	List of Manuals for Improving the EIA/SIA Process, December 2002
20	Workshop on Mitigation Measures for Hydropower Development Projects - Program, Speech, Presentaion and Photographs, December 2002
21	Workshop on Certification Standards for EIA Professionals - Program, Speech, Presentaion & Photographs, December 2002
22	A concept paper on Wheeling Rates/Transmission Services Pricing, December 2002
23	Manual for Developing and Reviewing WQ Monitoring Plans and Results for Hydropower Project
24	Power Sedctor Structure, December 2002
25	NEA Corporate Plan
26	Evaluation of Technical Proposal - PDF/A, March 2002
27	Evaluation of Financial Proposal - PDF/A, October 2002

Progress Reports 2002

S.N.	OUTPUTS
1	First Semi Annual Report - (December 12, 2001 through June 30, 2002)
2	First Annual Report (December 12, 2001 through December 31, 2002)

Notes of The Meetings 2002

S.N	OUTPUTS
1	Notes of the Progress Meeting- January 10, 2002
2	Notes of the Progress Meeting- March 13, 2002
3	Notes of the Progress Meeting- June 14, 2002
4	Notes of the Progress Meeting -October 3, 2002
5	Notes of the Progress Meeting - November 21, 2002

Presentations- 2002

S.N	OUTPUTS
1	Presentation on Development Analysis (EIA), September 2002
2	Presentation on Certification Standards for EIA Professionals, November 2002
3	Presentation on Mitigation Measures for Hydropower Developments, November, 2002
4	Presentation on Public Hearings on Hydropower Development Projects, December 2002

Outputs 2003

SN	Outputs
1	Year Workplan 2003
2	World Commission on Dams Guidelines List and Analytical Spreadsheet, January 2003
3	World Commission on Dams Reports in Nepali Press, January 2003
4	Proceedings of Workshop on Certification Standards for EIA Professionals, May 2003
5	Proceedings of Workshop on Mitigation Measures for Hydropower Projects, June 2003
6	Proceedings of Workshop on Public Hearings for Hydropower Development Projects, June 2003
7	Proceedings of Workshop on Gender Participation in Hydropower Development Projects, June 2003
8	Statement of Work to Develop and install a Database for Tracking License Application, Royalty Payments, and O&M Monitoring at DOED, July 2003
9	Notes on Lower Arun HEP Feasibility Report, July 2003
10	Prequalification Documents to select Bidders to Conduct Feasibility Studies and EIAs, July 2003
11	Estimates of Revenue for Hydropower Projects in Categories 1, 2 and 3, September 2003
12	Raw Data from Nepal Hydropower Association Database 2001 and Evaluation and Licensing Section, Privatization Division, DOED, September, 2003
13	Regulatory Sector Reform Study Tour to Indian States for Nepal Delegation, September 2003
14	Study and Recommendations for Interim Measures to Strengthen ETFC, September 2003
15	Draft Design of New Electricity Regulatory Commission, September 2003
16	Indian Electricity Market Initial Review, November, 2003
17	Ideas for an Alternative Review and Approval Process for Initial Environmental Examinations (IEEs) and EIA (EIAs) of Hydropower Projects, December 2003
18	NERC/Power Sector Reform, December 2003
19	RFP for Feasibility Studies, December 2003
20	Draft Administration Agreement for Negotiation with PDFA

Progress Reports 2003

S.N.	OUTPUTS
1	Semi-Annual Report # 3 - January - June 2004
2	Semi-Annual Report # 4 - July - December 2004

Notes of The Meetings 2003

S.N	OUTPUTS
1	Notes of the SOT meetings - January 10, 2003
2	Notes of the progress meeting -February 27, 2003
3	Notes of the progress meeting - April 15, 2003
4	Notes of the progress meeting - June 6, 2003

Presentations- 2003

S.N	OUTPUTS
1	Feasibility Studies Due Dilligence Training (Presentation), July 2003
2	Powerpoint Presentaton on Equity and Benefits of Hydropower Development given to DOED on October 1, 2003
3	Preliminary Due Dilligence Power Sector Laws, December 2003
4	Nepal Power Sector Regulation : Short- and Long-Term Questions, September 2003
5	Presentation on Power Sector Reform Tour, September 2003
6	Introduction to the Clean Development Mechanism, April 2003
7	Presentaion on the Role of the Power Development Fund (PDF) Board in the Mangement of the PDF
8	Mitigation Measures Analysis, May 2003
9	EIA Experience in USA, May 2003
10	Alternatives Analysis, May 2003

List of outputs 2004

S.N	Outputs
1	Final Third Year Workplan
2	Proceedings of 5- day EIA training course held in April 2003, January 2004
3	Initial Draft Outreach Program for Stakeholder Workshop and Transaction, February 2004
4	Transactions of Workshop on Draft Manual for Gender Participation in Hydropower Development Program, Speeches, Presentations, Group Conclusions, and Photographs, February 2004
5	Manual of DOED License Management Database, February 2004
6	Review and Comments on Lower Arun Project, March 2004
7	Subcontract with Butwal Power Company for Feasibility study for Khare Khola Project, April 2004
8	Subcontract with Nepal Consult Ltd. for Feasibility study for Maya Khola Project, April 2004
9	Draft Report on Training Effectiveness Assessment, April 2004
10	Draft Program Review & Development of Rural Electric Cooperatives, June 2004
11	Final Inception Report for Khare Khola Project, June 2004
12	Final Inception Report for Maya Khola Project, June 2004
13	Draft of Manual for Addressing Gender Issues in Environmental Impact Assessment/Initial Environmental Examination for Hydropower Projects, August 2004
14	Discussion Documents on new Electricity and NERC Act (Amendment to EA 1992), September 2004
15	Distribution and Use of Hydropower Royalty Revenue B.S. 2057-B.S. 2058 (2000-2002), September 2004
16	Report on Alternative approaches for pre-qualification of applicants for developing medium-sized (25-30 MW) hydropower projects, November 2004
17	Review of PDFA Operation and Risk Management and Financial Management Systems, November 2004
18	Draft new Electricity Act, 1992 (Nepali/English version), November 2004
19	Manual for Conducting Public Hearings in the Environmental Impact Assessment Process for Hydropower Projects (Published), December 2004
20	Review of Roshi Khola Screening Study, December 2004
21	Guidelines for Study of Hydropower Projects (published), December 2004
22	Compilation of Policies, Acts and Regulations Relevant to Hydropower Development in Nepal, December 2004
23	Final Draft Manual for Baseline Information, Impact Analysis and Mitigation Measures for EIA of Hydropower Projects.
24	Terms of Reference of Selection of ETFC Chairman (advertisement)
25	Final draft of brochure on hydropower licensing and development procedures to assist project developers
26	Initial Draft of Institutional Strengthening Power Sector Regulatory Regime to Establish NERC
27	PDF Administration Agreement
28	Summary of USAID activities under SO6, SpO4 and PEP in support of Policy reform in Nepal's Power Sector

Progress Reports 2004

S.N.	OUTPUTS
1	Semi-Annual Report # 5 - January - June 2004
2	Semi-Annual Report # 6 - July - December 2004
3	Monthly Progress Reports - January through December 2004

Notes of The Meetings 2004

S.N	OUTPUTS
1	Notes of the SOT meetings - February 4, 2004
2	Notes of the Presentation to the USAID Director - April 29, 2004
3	Regulatory Tour to India, April 2004
4	Notes of the progress meeting - June 18, 2004
5	Notes of the progress meeting - July 6, 2004
6	Notes of the progress meeting - September 21, 2004
7	Notes of the progress meeting - December 16, 2004

Presentations- 2004

S.N	OUTPUTS
1	Presentation to USAID Director, April 29
2	Program Review and Development of Rural Electric Cooperatives, April 2004
3	Presentation to Bikash Bazar, May 2004
4	Presentation to ICPS 2004, November 2004
5	Presentation to Workshop on Nepal Power Sector Reform, November 2004
6	Presentation to Workshop to Formulate a Public Outreach Program in Hydropower Development, March 2004
7	Electricity Royalty Revenue Projections and Proposed 12% and 38%, March 2004
8	Electro Tech 2004 Presentation
9	Presentation on IRG get to-gether, December 2004
10	Training Course on Environmental Impact Assessment and Hydropower Development, May 2004

List of outputs 2005

S.N	OUTPUTS
1	Final Work Plan 2005
2	English version of License Application Procedures for Hydropower Development in Nepal (Published), February 2005
3	Notice for Invitation for prequalification and RFQ Documents for Development of Kabeli - A Hydropower Development Project, February 2005
4	Draft of Nepali version of NERC Act as sent to Stakeholder Meeting, March 2005
5	Draft of English version of NERC Act as sent to Stakeholder Meeting, March 2005
6	Draft of Nepali version of Electricity Act as sent to Stakeholder Meeting, March 2005
7	Draft of English version of Electricity Act as sent to Stakeholder Meeting, March 2005
8	Field report of Maya Khola SHP, March 2005
9	Compilation of Stakeholder comments on Draft Electricity Act and Draft NERC Act, April 2005
10	Proceedings of two days stakeholder meeting held on April 12-13
11	Memorandum to MOWR Secretary on NEA Board Reform, April 2005
12	Field report of Khare Khola SHP, April 2005
13	Draft Public Outreach Program for Hydropower Development in Nepal, May 2005
14	Manual for Addressing Gender Issues in EIA/IEE for Hydropower Projects (Published), May 2005
15	Upgrading existing Documentation Center at DOED to Public Information Center, May 2005
16	Terms of Reference (TOR) of Khare Khola SHP, May 2005
17	Revised English version of License Application Procedures for Hydropower Development in Nepal, June 2005
18	Nepali version of License Application Procedures for Hydropower Development in Nepal, (Published) June 2005
19	Final Scoping and TOR Documents for Khare Khola SHP, June 2005
20	Final Scoping and TOR Documents for Maya Khola SHP, June 2005
21	Revised Draft Action Plan for Strengthening ETFC and supporting Initial Operation of NERC, June 2005
22	Scoping Document of Khare Khola SHP, June 2005
23	Terms of Reference for IEE of Access Road for the Khare Khola SHP, June 2005
24	Terms of Reference for IEE of 33kV Transmission Line of the Khare Khola SHP, June 2005
25	Draft Action Plan for Institutional Strengthening Department of Electricity Development, June 2005
26	Review of NEA Grid Code, June 2005
27	Request for Proposals for Market Research, June 2005
28	Draft Manual for Baseline Information Impact Analysis and Mitigation Measures for EIA of Hydropower Project, July 2005
29	Documents on NEA Board Reform, September, 2005
30	Draft Discussion Paper to Improve Implementation of One-Window Policy, November 2005
31	Comments to DOED on NEA's Proposal for Study to improve Financial Situation of NEA
32	Draft RFP and revised draft of Project Agreement for Development of Kabeli-A Hydropower Development Project
33	Study on Domestic Financing of Hydropower Projects, June 05

Progress Reports 2005

S.N.	OUTPUTS
1	Semi Annual Report # 7 January -June 2005
2	Semi Annual Report # 8 July - December 2005
3	Monthly Progress Reports -January trthrough December 2005

Notes of Progress Meetings 2005

S.N	OUTPUTS
1	Final notes of SOT Meeting, of March 10, 2005
2	Notes of Progress meeting of January 31, 2005
3	Notes of Progress meeting of June 20, 2005
4	Notes of Progress meeting of August 24, 2005
5	Notes of Progress meeting of October 26, 2005

Presentations- 2005

S.N	OUTPUTS
1	Presentation on PSHDP-2 to US Commercial Attaché, March 2005
2	Presentation of Training for Power Sector Decision Makers Key Topics in Electricity Regulation, April 2005
3	Presentation on Royalty Revenue Sharing: A Perspective from Outside, May 2005
4	Presentation on DOED/PSHDP to Engineering Expo 2005, May 2005
5	Preparing for a Rate Case Application/Review: Data Collection, Document Preparation, and Public Hearing (IP3 Course), September 2005
6	Presentation on Transmission Line Stakeholder Meeting, November 2005
7	Hydropower Development in Nepal - An overview (executive Negotiation Program), Novemebr 2005

List of outputs 2006

S.N	OUTPUTS
1	Final Workplan, 2006
2	NERC Enabling Regulations (Partial), February 2006
3	Development Updates on License Management (LMS) System Database, February 2006
4	Handouts of training on updated DOED website to DOED Staff, February 2006
5	Handouts of training to DOED staff to manage, operate, Maintain computer network Servers, May 2006
6	Comments on RFP, PPA, PDA, QA of Kabeli-A Hydroelectricity Project, July 2006
7	Final Feasibility Study Report of Maya Khola SHP August 2006
8	Final Feasibility Study Report of Khare Khola SHP August 2006
9	Final EIA for Maya Khola SHP, August 2006
10	Final EIA for Khare Khola SHP, August 2006
11	POP - Stakeholder Knowledge, Attitude and Perception Quantitative Survey, November 2006
12	POP - Stakeholder Empathy, Persuasion, Impact, and Communication Qualitative Survey, November 2006
13	Public Outreach program for Hydropower Development in Nepal - Final Report, December 2006
14	Nepal-India Transmission Line Link to Facilitate Power Trade, December 2006
15	Final Draft Manual on Baseline, Impact Analysis and Mitigation, December 2006

Progress Reports 2006

S.N.	OUTPUTS
1	Semi Annual Report # 9 January -June 2006
2	Monthly Progress Reports -January -Sep 2006
3	Semi Annual Report # 10 June -December 2006

Notes of Progress Meetings 2006

S.N.	OUTPUTS
1	Final notes of SOT Meeting, of March 30, 2006
2	Notes of Progress meeting of January 19, 2006
3	Notes of Progress meeting of March 16, 2006
4	Notes of Progress meeting of July 20, 2006
5	Notes of Progress meeting of November 28, 2006

Presentations- 2006

S.N.	OUTPUTS
1	Carbon Trading Opportunities in Nepal, January 2006
2	Network Management presentation, June 2006
3	Website Training presentation, June 2006
4	POWERing Nepal- Connecting Markets, November 2006
5	PSHDP 2- Project Closeout, December 2006

Appendix 3 – Training Activities

Significant in-country and out-of-country training activities conducted by PSHDP-2 are listed below. The CD enclosed with the report provides more information on individual training activities.

Private Sector Participation In Hydropower Development - 2 (PSHDP-2)
 USAID/GON Strategic Objective 06 - increased Public Sector Participation in
 Environmentally and Socially Sustainable Hydropower Development in Nepal
 USAID/IRG Contract # 367-C-00-02-00011-00
 Dec 2001- Dec 2006

In-country training 2002
2002

S.N	Course Title	Start Date	End Date	No. of participants	Male	Female
1	11th EIA Training in SchEMS	8-Sep-02	22-Sep-02	2	2	-
2	Access Programming and Web Page Basic	29-Oct-02	29-Oct-02	6	6	-
3	Advance Features in MS Office	29-Oct-02	29-Oct-02	8	8	-
4	Basic Windows and MS Office	29-Oct-02	29-Oct-02	15	14	1
5	Web Page Basic	29-Oct-02	29-Oct-02	7	6	1
6	W/S on Gender Participation in Hydropower Dev. Projects	29-Nov-02	29-Nov-02	40	22	18
7	W/S on Certification Standards for EIA Professionals	6-Dec-02	6-Dec-02	43	34	9
8	W/S on Mitigation Measures for Hydropower Developments	13-Dec-02	13-Dec-02	37	32	5
9	W/S on Public Hearing for Hydropower Developments	27-Dec-02	27-Dec-02	36	28	8

In-country training 2003

S.N	Course Title	Start Date	End Date	No. of participants	Male	Female
1	8th National Convention and FEISCA Regional Meet	5-Apr-03	5-Apr-03	18	15	3
2	Five Day Training Course on EIA and Hydropower Development	30-Apr-03	6-May-03	29	23	6
3	Due-diligence training	7-Jun-03	7-Jun-03	6	6	-
4	Workshop on Economic Valuation of Environmental Resources	3-Aug-03	6-Aug-03	2	2	-
5	Power System Deregulation	21-Sep-03	26-Sep-03	6	6	-
6	Workshop on Draft Manual for conducting Public Hearing	16-Oct-03	16-Oct-03	40	30	10

In-country training 2004

S.N	Course Title	Start Date	End Date	No. of participants	Male	Female
1	Workshop on Gender Participation in EIA of Hydropower Development Projects	4-Feb-04	5-Feb-04	34	22	12
2	Workshop on Public Outreach Program Development	26-Mar-04	26-Mar-04	43	37	6
3	W/S on Program Review & Dev. of Rural Electric Co-operatives Consultancy	5-Apr-04	5-Apr-04	31	30	1
4	Fourth Nepal Geological Congress	9-Apr-04	11-Apr-04	2	2	-
5	Disaster Preparedness	11-Apr-04	12-Apr-04	4	4	-
6	Workshop on Draft Manual for Baseline Information, Impact Analysis and Mitigation Measures	6-May-04	7-May-04	35	30	5
7	5-day Course on Practical Experience and Improvement on Mitigation and Monitoring	10-May-04	14-May-04	46	40	6
8	Distribution of Automation	23-May-04	26-May-04	3	3	-
9	Generation Planning Concepts	24-May-04	1-Jun-04	11	11	-
10	Computer Training (Beginners Course on Operating System)	8-Sep-04	22-Dec-04	16	12	4
11	International Conference of Power System	3-Nov-04	5-Nov-04	11	11	-

In-country training 2005

S.N	Course Title	Start Date	End Date	No. of participants	Male	Female
1	Training on topics of Regulation of Nepal Power Sector	21-Apr-05	22-Apr-05	34	32	2
2	9th National Convention of Engineers	6-May-05	8-May-05	15	15	-
3	6th International Conference on Development of Hydropower	7-Jun-05	9-Jun-05	5	5	-
4	Awareness Programme on Earthquake Safety	17-Jun-05	17-Jun-05	23	20	3
5	Small Hydro Training	8-Jul-05	11-Jul-05	2	2	-
6	Introduction of Hydropower Projects	10-Jul-05	14-Jul-05	4	3	1
7	Preparing for a Rate Case App./Review Data Coll., Doc. Prep. & Public Hearing	26-Sep-05	30-Sep-05	22	22	-
8	Fifth Asian Regional Conference on Engineering Geology	28-Sep-05	30-Sep-05	3	3	-
9	Headworks Design Workshop	14-Nov-05	19-Nov-05	1	1	-
10	Study of Transmission Line Link between Nepal and India	25-Nov-05	25-Nov-05	25	24	1

* Excludes cost of IRG staff costs, office expenses, and IRG consultants' costs

In-country training 2006

S.N	Course Title	Start Date	End Date	No. of participants	Male	Female
1	Carbon Credit Workshop	31-Jan-06	31-Jan-06	31	26	5
2	Hydropower Project Engineering Studies	9-Jul-06	14-Jul-06	1	1	-
3	Computer training on MS Project 2003	11-Oct-06	20-Nov-06	27	27	-

Private Sector Participation In Hydropower Development - 2 (PSHDP-2)
 USAID/GON Strategic Objective 06 - increased Public Sector Participation in
 Environmentally and Socially Sustainable Hydropower Development in Nepal
 USAID/IRG Contract # 367-C-00-02-00011-00
 Dec 2001- Dec 2006

Overseas training 2002

S.N	Course Title	Start Date	End Date	No. of participants	Male	Female
1	Public Private Partnership in Power Sector	10-Jun-02		4	4	-
2	Investment Appraisal and Risk Analysis	8-Jul-02		2	2	-
3	Hydrovision 2002 Conference	29-Jul-02		5	5	-
4	HYDRO - 2002	4-Nov-02		5	5	-
5	Infrastructure Financial Analysis, Modeling and Rate Setting	11-Nov-02		4	4	-

Overseas training 2003

S.N	Course Title	Start Date	End Date	No. of participants	Male	Female
1	World Water Forum	16-Mar-03		7	7	-
2	Powerisk 2003 Conference	25-Jun-03		2	2	-
3	Management Development Program	15-Sep-03		2	2	-
4	Power Sector Restructuring and Reform in India	18-Sep-03		6	6	-
5	Hydro 2003: The way Forward for Hydropower	3-Nov-03		5	5	-
6	37th Program for Development Managers	3-Nov-03		2	2	-
7	Advance Project Finance Analysis and Modeling for Infra. Investme	8-Dec-03		2	2	-

Overseas training 2004

S.N	Course Title	Start Date	End Date	No. of participants	Male	Female
1	Regulatory Study Tour of Indian States	19-Apr-04	25-Apr-04	7	7	-
2	Project Appraisal & Risk Management	17-May-04	11-Jun-04	2	2	-
3	Generation Planning Model Training	9-Aug-04	3-Sep-04	4	4	-
4	World Renewable Energy Congress	29-Aug-04	3-Sep-04	3	3	-
5	World Energy Congress	5-Sep-04	9-Sep-04	5	5	-
6	Hydro 2004	18-Oct-04	24-Oct-04	2	2	-
7	Basic Mangement Program	8-Nov-04	26-Nov-04	2	2	-

Overseas training 2005

S.N	Course Title	Start Date	End Date	No. of participants	Male	Female
1	India Hydro 2005	19-Feb-05	21-Feb-05	6	6	-
2	International Network on Small Hydro Power	2-Jun-05	7-Jun-05	4	4	-
3	Hydro 2005	17-Oct-05	23-Oct-05	2	2	-
4	Executive Negotiations Program	27-Nov-05	6-Dec-05	7	7	-

Overseas training 2006

S.N	Course Title	Start Date	End Date	No. of participants	Male	Female
1	Small Hydropower Development	14-Feb-06	25-Feb-06	1	1	-

Appendix 4 – List of STTA Specialists and Subcontractors

1. Short Term Expatriate Technical Assistance

Year 2002

Name	No. of STTA days in Nepal	Assignment
Charles Moseley	74	Acting COP; Power Sector Reform Specialist
Kenneth Lussier	46	Finance Expert
Shakeb Afsah	12	Database Designer
Mark Jordan	18	Database Analyst
John Andrews	44	Training Assessment Specialist
Ali Memon	19	Utility Reform Expert

Year 2003

Name	No. of STTA days in Nepal	Assignment
Charles Moseley	57	Acting COP; Power Sector Reform Specialist
Pat Sonti	31	Specialist, India Power Sector
Kenneth Lussier	19	Finance Expert
Shahid Ahmad	35	Institutional Specialist
Mathew Mendis	5	Corp. VP; Program overview
John Edwards	11	Utility Tariff Specialist
Ejaz Khan	14	Legal Expert
Mary Webster	7	Regulatory Specialist

Year 2004

Name	No. of STTA days in Nepal	Assignment
Darryl Kuhnle	16	Public Outreach Specialist
Philip Costas	25	Rural Electrification Specialist
Ken Lussier	17	Finance Expert
Matthew Mendis	6	Corp. VP; Program overview
Ejaz Khan	13	Legal Expert
Mary Webster	7	Regulatory Specialist
Shahid Ahmad	17	Institutional Specialist
Leei Wang	15	Engineering Expert
Harsha de Silva	13	Public Outreach Specialist
Charles Ebinger	12	Home Office Manager; Reform Policy Specialist

Year 2005

Name	No. of STTA days in Nepal	Assignment
Charles Ebinger	64	Home Office Manager; Reform Policy Specialist
Robert Fitzgibbons	23	Legal and Contracts Specialist
Mary Webster	23	Regulatory Specialist
Harsha de Silva	14	Public Outreach Specialist
Carlos Yermoli	20	Utility Grid Code Specialist (service provided from home office in the US)
Reji Rejikumar	30	Transmission Line Specialist
David Saul	13	Transmission Line Specialist
Toby Manning	16	Transmission Line System Modeler

Year 2006

Name	No. of STTA days in Nepal	Assignment
Charles Ebinger	39	Home Office Manager; Reform Policy Specialist
Reji Rejikumar	7	Transmission Line Specialist
David Saul	9	Transmission Line Specialist

2. Short Term Domestic Consultants

Dr. Ram K Khadka - Environmental Specialist to assist with curriculum development at the School of Environmental Management and with preparation of Manual on Baseline Information, Impact Analysis and Mitigation Measures in EIA for Hydropower development (Dec 2001- Sep 2006)

Ms. Hasina Shrestha - Gender Specialist to assist with preparation of Manual on Gender Issues in Hydropower Development (Dec 2001- June 2005)

Mr. M. P. Sharma - Legal Expert to assist with revision of Electricity Act 1992(May 2004 - Dec 2004)

Mr, H. K. Chaulagai - Legal Expert to draft new Electricity Act and the NERC Act (Nov 2004 - Jan 2006)

3. Domestic Subcontractors

Shah Consultants International

Engineering Consultants to assist with preparation of technical guidelines, preparation of contract documents for BOOT project development, feasibility studies, and oversight of local consultants preparing feasibility studies and EIA

METCON Consultants

Environmental Consultants to assist with the preparation of Manual on Conducting Public Hearings for Hydropower development and with studies on establishing Certification Standards for EIA Professionals.

A. C. Neilsen

Consultants to conduct nationwide survey and focused group discussions to collect primary data on level of stakeholder Knowledge, Awareness, and Perception as well as stakeholder Empathy, Persuasion, Impact and Communication on hydropower development in Nepal

Appendix 5 – List of Non-Perishable Commodities transferred to DOED/USAID

Tables below list various commodities that were procured by PSHDP-2 as well as that handed over to PSHDP-2 from previous USAID contracts.

PROCURED IN PSHDP-2 (USAID Contract # 367-C-00-02-00011-00)

Equipment

Sr.#	Date of purchase	Description	Unit Price		Qty.	A m o u n t		Date of the latest USAID/N inventory audit
			NRs.	US\$		NRs.	US\$	
1	1-Mar-02	Dell Inspiron 8100, Pentium III, Notebook Computer		2,095.50	1		2,095.50	11/15/2006
2	12-Oct-06	Dell Inspiron 6400, Pentium 4, Notebook Computer	118,000.00		1	118,000.00		11/15/2006
3	21-May-02	Dell Optiplex GX 240 SMT Pentium IV Desktop Computer		1,325.00	4		5,300.00	11/15/2006
4	6-Aug-02	Toshiba Satellite Pro 490 X CDT, Pentium II Notebook comp.		352.25	1		352.25	11/15/2006
6	14-Aug-02	PABX Telephone System for IRG with 2 CO/10 Extensions	87,500.00		1	87,500.00		11/15/2006
7	25-Oct-02	Powertree 600 VA UPS	6,300.00		3	18,900.00		11/15/2006
8	11-Dec-02	Powertree 600 VA UPS	6,300.00		6	37,800.00		11/15/2006
9	17-Jan-03	Nokia 3310 Mobile Set	7,500.00		1	7,500.00		11/15/2006
10	30-Jun-03	Cannon 1210 LaserJet Printer	26,180.00		1	26,180.00		11/15/2006
11	29-Jul-03	Calculator (DR-120)	5,200.00		1	5,200.00		11/15/2006
12	20-Nov-03	Samsung Mobil Set N500	10,500.00		1	10,500.00		11/15/2006
13	21-Nov-03	Allied Telesyn AT-FS724i 10/100 24 Ports switch	38,000.00		1	38,000.00		11/15/2006
14	21-Nov-03	Dell PowerEdge 2600 Server		4,150.00	1		4,150.00	11/15/2006
15	21-Nov-03	APC 1 KVA Smart UPS		440.00	1		440.00	11/15/2006
16	19-Apr-04	Beltronix Desktop Computer Set – BBM 1800 PIV, Intel 1.8 GHz, 256 MB RAM, 40 GB HDD, 17" Monitor, CD RW, 600 VA Sola UPS	48,948.00		1	48,948.00		11/15/2006
17	29-Jun-04	HP Scanjet 4670	26,400.00		1	26,400.00		11/15/2006
18	10-Nov-04	Canon LBP 1210 Laser Printer	17,273.00		1	17,273.00		COP's residence
19	10-Nov-04	External CD writer	9,500.00		1	9,500.00		11/15/2006
20	1-Dec-04	Toshiba Tecra Laptop		1,600.00	1		1,600.00	11/15/2006
21	1-May-05	Nikon Coolpix 4600 Digital Camera	19,000.95		1	19,000.95		11/15/2006
22	1-Jun-05	Cannon B820 Fax Machine	16,441.50		1	16,441.50		11/15/2006
23	11-Jul-05	Xerox C-55 photocopier with Network		8,000.00	1		8,000.00	11/15/2006
24	28-Mar-06	Canon I6100 Color Inkjet Printer	24,300.00		1	24,300.00		11/15/2006
		Total	467,343.45	17,962.75		511,443.45	21,937.75	

Furniture

Sr.#	Date of purchase	Description	Unit Price		Qty.	A m o u n t		Date of the latest USAID/N inventory audit
			NRs.	US\$		NRs.	US\$	
1	14-Aug-02	conference Table - (3' X6' X 2.5')	5,850.00		1	5,850.00		11/15/2006
2	14-Aug-02	Wooden Armed Chair (Rexin back)	1,550.00		2	3,100.00		11/15/2006
3	14-Aug-02	Wooden Chair without armed (Rexin back)	1,450.00		4	5,800.00		11/15/2006
4	14-Aug-02	Lather Back Revolving Chair	11,500.00		1	11,500.00		11/15/2006
5	14-Aug-02	Wooden Rack - 78" X 36" X 12"	5,450.00		2	10,900.00		11/15/2006
6	14-Aug-02	Executive Office Table (2 pcs set) one with side drawer						11/15/2006
		2.5' X 5' X 2.5' and 2' X 5' X 2.5'	19,500.00		1	19,500.00		11/15/2006
7	14-Aug-02	Wall Hanging Open Rack (2.5' X 4' X 1)	3,250.00		8	26,000.00		11/15/2006
8	15-Aug-02	VIP Steel Book Case (66" X 33" X 14")	7,920.00		1	7,920.00		11/15/2006
9	15-Aug-02	12 Compartment Wooden Rack (48" X 96" X 12")	8,250.00		1	8,250.00		11/15/2006
10	15-Aug-02	12 Compartment Wooden Rack (45" X 96" X 12")	8,250.00		1	8,250.00		11/15/2006
11	15-Aug-02	Taiwani Revolving Chair	5,157.00		1	5,157.00		11/15/2006
12	4-Sep-02	Taiwani Revolving Chair	5,157.00		2	10,314.00		11/15/2006
13	4-Sep-02	VIP Filing Cabinet, Two Drawer	5,555.00		1	5,555.00		11/15/2006
14	7-Sep-04	Steel Almirah Plain (66"x33"x18")	5,416.00		1	5,416.00		11/15/2006
15	7-Sep-04	Wooden Square Table (21"x21")	1,560.00		1	1,560.00		11/15/2006
16	8-Sep-04	Square Table with Movable Box (3'x6'x30")	12,390.00		1	12,390.00		11/15/2006
17	20-Nov-06	Steel Book Case	10,466.00		3	31,398.00		
18	12-Dec-06	Cabinet for Topographic Maps	21,735.00		1	21,735.00		
		Total	108,205.00	-	1	147,462.00	-	

Miscellaneous

Sr.#	Date of purchase	Description	Unit Price		Qty.	A m o u n t		Date of the latest USAID/N inventory audit
			NRs.	US\$		NRs.	US\$	
1	13-Aug-02	48" Ceiling Fan	1,550.00		3	4,650.00		11/15/2006
2	27-Aug-02	Ceilling Fan	1,750.00		1	1,750.00		11/15/2006
3	13-Aug-02	LG Refrigerator 94 Ltr.	13,600.00		1	13,600.00		11/15/2006
4	10-Dec-03	Fan Heater	3,000.00		3	8,999.99		11/15/2006
5	12-Apr-04	Paper Shredder	15,950.00		1	15,950.00		11/15/2006
6	10-May-04	Ceilling Fan	1,900.00		1	1,900.00		11/15/2006
8	1-Apr-06	Battery backup for IRG	103,480.00		1	103,480.00		11/15/2006
9	12-Dec-06	Technincal text Books for DOED (set)		3,500.00	1	-	3,500.00	
Total			141,230.00	-		150,329.99		

PROCURED IN PSHDP-1 (USAID Contract # 367-C-00-98-00071-00)

Equipment

Sr.#	Date of purchase	Description	Unit Price		Qty.	A m o u n t		Date of the latest USAID/N inventory audit
			NRs.	US\$		NRs.	US\$	
1	5-Feb-99	Dell Optiplex G1 Pentium II, Desktop computers		1,630.00	2		3,260.00	11/15/2006
2	5-Feb-99	Dell Latitude Notebook CP Travel Model		3,020.00	2		6,040.00	11/15/2006
3	5-Feb-99	HP Laserjet 4000 Printer		1,350.00	1		1,350.00	11/15/2006
4	5-Feb-99	Deskjet 695C Printer		400.00	1		400.00	11/15/2006
5	5-Feb-99	3M Multimedia Projector - MP8625		6,400.00	1		6,400.00	11/15/2006
6	5-Feb-99	Kodak Ektalite Slide Projector		945.00	1		945.00	11/15/2006
7	5-Feb-99	3M Overhead Projector w\Screen		725.00	1		725.00	11/15/2006
8	5-Feb-99	Stavol 500 VA Voltage Stabilizer		200.00	4		800.00	11/15/2006
9	23-Sep-99	Allied Teleseyn 8 port Hub 4T MR815T, 8X10 base T	5,000.00		1	5,000.00		11/15/2006
Total			5,000.00	14,670.00		5,000.00	19,920.00	

Furniture

Sr.#	Date of purchase	Description	Unit Price		Qty.	A m o u n t		Date of the latest USAID/N inventory audit
			NRs.	US\$		NRs.	US\$	
1	22-Nov-98	Curve design 19 mm board teak top office table	8,875.00	0	1	8,875.00		11/15/2006
2	22-Nov-98	Curve design 19 mm board teak top side box with						11/15/2006
		filing device - 18"X24"X26"	4,500.00	0	2	9,000.00		11/15/2006
3	22-Nov-98	Curve design 19 mm board teak top table side unit						11/15/2006
		18"X36"X30"	3,950.00	0	1	3,950.00		11/15/2006
4	22-Nov-98	Curve design 19 mm board teak top table side unit with						11/15/2006
		Rack and two drawer filing device - 18"X36"X30"	6,975.00	0	2	13,950.00		11/15/2006
5	22-Nov-98	Open Rack 19 mm board (file size) - 12"X36"X78"	4,550.00	0	1	4,550.00		11/15/2006
6	22-Nov-98	Curve edged 19 mm board filing cabinet						11/15/2006
		18.5"X24"X54"	9,250.00	0	1	9,250.00		11/15/2006
7	22-Nov-98	19 mm board mat top table- 30"X48"X30"	2,450.00	0	3	7,350.00		11/15/2006
8	06-Mar-99	19 mm board mat top Double Box Table.03"X60"X30"	9,300.00		1	9,300.00		11/15/2006
9	6-Mar-99	Steel Revolving Chair Pushback System	3,500.00		1	3,500.00		11/15/2006
10	6-Mar-99	Green Board (Soft Notice Board)	1,850.00		1	1,850.00		11/15/2006
11	29-Jul-99	Wooden Rack - 6.5' X 36" X 12"	4,550.00		1	4,550.00		11/15/2006
12	29-Jul-99	Wooden Filing Cabinet - 18.5" X 24" X 54"	9,250.00		1	9,250.00		11/15/2006
13	29-Jul-99	Ordinary Table 30" X 48" X 30"	2,450.00		3	7,350.00		11/15/2006
14	5-Jan-00	Green Board (Soft Notice Board) (3' X 5')	2,850.00		1	2,850.00		11/15/2006
15	23/3/00	Book Case	4,000.00		1	4,000.00		11/15/2006
16	3-Apr-00	Clip Board With Stand (30"X48)	3,950.00		2	7,900.00		11/15/2006
17	28-Aug-00	Soft Board (30"X48)	1,950.00		1	1,950.00		11/15/2006
18	28-Aug-00	White Board (24"X48)	1,650.00		1	1,650.00		11/15/2006
19	12-May-01	Single Box Office Table 19 mm Board and Teak (24"X42"X30")	5,450.00		1	5,450.00		11/15/2006
		Total	91,300.00	-		116,525.00	-	

Miscellaneous

Sr.#	Date of purchase	Description	Unit Price		Qty.	A m o u n t		Date of the latest USAID/N inventory audit
			NRs.	US\$		NRs.	US\$	
1	14-Dec-98	HIC Binding Machine	26,500.00		1	26,500.00		11/15/2006
2	1-Dec-99	Room Gas Heater	13,000.00		2	26,000.00		11/15/2006
3	3-Dec-99	Gas Cylinder	1,745.00		2	3,490.00		11/15/2006
4	24-Mar-00	Paper Shredder	23,850.00		1	23,850.00		11/15/2006
5	05-Dec-01	LG Vacuum Cleaner	4,500.00		1	4,500.00		11/15/2006
		Total	69,595.00	0.00		84,340.00	0.00	11/15/2006

Received from PEP (USAID contract # 367-C-00-95-05117-00)

Sr.#	Date of purchase	Description	Unit Price		Qty.	A m o u n t		Date of the latest USAID/N inventory audit
			NRs.	US\$		NRs.	US\$	
1	30-Aug-98	Stavol Stablizer - 1500	16,700.00		1	16,700.00		11/15/2006
2	30-Aug-98	Stavol Stablizer - 1000	7,000.00		1	7,000.00		11/15/2006
3	30-Aug-98	Wooden Filing Cabinet	7,500.00		1	7,500.00		11/15/2006
4	30-Aug-98	Chest of Drawer	13,180.00		1	13,180.00		11/15/2006
5	30-Aug-98	Soft Board			1	-		11/15/2006
6	30-Aug-98	Side Unit			1	-		11/15/2006
7	30-Aug-98	Paper Tray			1	-		11/15/2006
8	30-Aug-98	Open Wooden Sefl	3,775.00		1	3,775.00		11/15/2006
9	30-Aug-98	Revolving Chair	3,000.00		1	3,000.00		11/15/2006
10	30-Aug-98	Easy Chair (with arms)	2,000.00		5	10,000.00		11/15/2006
11	30-Aug-98	Wooden Table	2,182.00		1	2,182.00		11/15/2006
12	30-Aug-98	Fakir Fan Heater	2,975.00		4	11,900.00		11/15/2006
13	30-Aug-98	Gas Room Heater with ragulator	13,400.00		3	40,200.00		11/15/2006
14	30-Aug-98	Gas Cylinder	1,795.00		3	5,385.00		11/15/2006
15	30-Aug-98	Telephone Sets			4			11/15/2006
16	30-Aug-98	CASIO Digital Camera 5003586A		422.99	1		422.99	11/15/2006

PROCURED IN PSHDP-2 (USAID Contract # 367-C-00-02-00011-00)

Equipment

Sr.#	Date of purchase	Description	Unit Price		Qty.	A m o u n t		End-use checks date & Remarks by USAID
			NRs.	US\$		NRs.	US\$	
1	8-Aug-02	Kodak, Easy Share DX 4900 Zoom, Digital Camera		417.98	1		417.98	11/15/2006

Miscellaneous

Sr.#	Date of purchase	Description	Unit Price		Qty.	A m o u n t		End-use checks date by USAID
			NRs.	US\$		NRs.	US\$	
1	3-Dec-04	Toshiba Water Pot	2,750.00		1	2,750.00		11/15/2006
		Total	2,750.00	-		2,750.00		

PROCURED IN PSHDP-1 (USAID Contract # 367-C-00-98-00071-00)

Furniture

Sr.#	Date of purchase	Description	Unit Price		Qty.	A m o u n t		Date of the latest USAID/N inventory audit
			NRs.	US\$		NRs.	US\$	
1	08-Dec-98	Steel executive Revolving Chair	8,500.00	0	2	17,000.00		11/15/2006
2	08-Dec-98	Wooden Visitor Chairs (Dunlop seated)	1,750.00	0	4	7,000.00		11/15/2006
		Total	10,250.00	-		24,000.00	-	

Received from PEP (USAID contract # 367-C-00-95-05117-00)

Sr.#	Date of purchase	Description	Unit Price		Qty.	A m o u n t		Date of the latest USAID/N inventory audit
			NRs.	US\$		NRs.	US\$	
1	30-Aug-98	External Modem for Email	10,000.00		2	20,000.00		11/15/2006
2	30-Aug-98	IOMEGA 100 MB Zip Drive	20,000.00		1	20,000.00		11/15/2006
3	30-Aug-98	Office Chairs (without arms)	125.00		4	500.00		11/15/2006
4	30-Aug-98	Electric Coffee Pot	4,100.00		1	4,100.00		11/15/2006