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the World Bank

Report No: ICR00001194

IMPLEMENTATION COMPLETION AND RESULTS REPORT
(IDA-37180)

ON A

CREDIT

IN THE AMOUNT OF SDR162.5 MILLION
(US$ 250 MILLION EQUIVALENT)

TO THE

REPUBLIC OF INDIA

FOR A

TECHNICAL/ENGINEERING EDUCATION QUALITY IMPROVEMENT PROJECT

September 24, 2009

Human Development Sector
India
South Asia Region

CURRENCY EQUIVALENTS

(Exchange Rate Effective March 30, 2009)

Currency Unit = Indian National Rupee (INR)
INR100.00 = US$ 2.38
US$ 1.00 = INR 42

FISCAL YEAR
April 1 – March 31

ABBREVIATIONS AND ACRONYMS

AICTE	All India Council for Technical Education
BOG	Board of Governors
BTE	Bureau of Technical Education
CAS	Country Assistance Strategy
CFI	Centrally Financed Institution
CIP	Concise Institutional Proposal
DSHE	Department of Secondary and Higher Education
FM	Financial Management
FMR	Financial Management Report
FY	Fiscal Year
GOI	Government of India
IAMR	Institute of Applied Manpower and Research
ICR	Implementation Completion and Results Report
IIT	Indian Institute of Technology
INR	Indian National Rupee
IRG	Internal Revenue Generation
IRR	Internal Rate of Return
ISR	Implementation Status and Results Report
JRM	Joint Review Mission
KPI	Key Performance Indicator
M & E	Monitoring and Evaluation
MDP	Management Development Program
MHRD	Ministry of Human Resource Development
MOU	Memorandum of Understanding
MTR	Mid-Term Review
NBA	National Board of Accreditation
NPE	National Policy of Education
NPIU	National Project Implementation Unit
NTMIS	National Technical Manpower Information System
OBC	Other Backward Classes
PAD	Project Appraisal Document
PDO	Project Development Objective
PG	Post-graduate
R & D	Research and Development
SC	Scheduled Caste
SDR	Special Drawing Rights

SIL	Specific Investment Loan
SPFU	State Project Facilitation Unit
ST	Scheduled Tribe
TEQIP	Technical Education Quality Improvement Project
TDP	Tribal Development Plan
TTTI	Technical Teachers' Training Institutes
UG	Undergraduate
UGC	University Grants Commission

Vice President:	Isabel Guerrero
Country Director:	N. Roberto Zagha
Sector Manager:	Amit Dar
Project Team Leader:	Andreas Blom
ICR Team Leader:	Sangeeta Goyal

INDIA
TECHNICAL/ENGINEERING EDUCATION IMPROVEMENT PROJECT (TEQIP)

CONTENTS

A. Basic Information

Country:	India	Project Name:	Technical/Engineering Education Quality Improvement Project
Project ID:	P072123	L/C/TF Number(s):	IDA-37180
ICR Date:	09/29/2009	ICR Type:	Core ICR
Lending Instrument:	SIL	Borrower:	GOVERNMENT OF INDIA
Original Total Commitment:	XDR 189.0M	Disbursed Amount:	XDR 161.9M
Revised Amount:	XDR 162.5M		
Environmental Category: C			
Implementing Agencies: Ministry of Human Resource Development			
Cofinanciers and Other External Partners:			

B. Key Dates

Process	Date	Process	Original Date	Revised / Actual Date(s)
Concept Review:	11/16/2001	Effectiveness:		03/12/2003
Appraisal:	06/28/2002	Restructuring(s):		
Approval:	11/14/2002	Mid-term Review:	10/31/2005	12/09/2005
		Closing:	06/30/2008	03/31/2009

C. Ratings Summary

C.1 Performance Rating by ICR

Outcomes:	Satisfactory
Risk to Development Outcome:	Moderate
Bank Performance:	Satisfactory
Borrower Performance:	Satisfactory

C.2 Detailed Ratings of Bank and Borrower Performance (by ICR)

Bank	Ratings	Borrower	Ratings
Quality at Entry:	Satisfactory	Government:	Satisfactory
Quality of Supervision:	Satisfactory	Implementing Agency/Agencies:	Satisfactory
Overall Bank Performance:	Satisfactory	**Overall Borrower Performance:**	Satisfactory

C.3 Quality at Entry and Implementation Performance Indicators			
Implementation Performance	**Indicators**	**QAG Assessments (if any)**	**Rating**
Potential Problem Project at any time (Yes/No):	No	Quality at Entry (QEA):	None
Problem Project at any time (Yes/No):	Yes	Quality of Supervision (QSA):	None
DO rating before Closing/Inactive status:	Satisfactory		

D. Sector and Theme Codes		
	Original	**Actual**
Sector Code (as % of total Bank financing)		
Central government administration	2	1
Sub-national government administration	1	1
Tertiary education	97	98
Theme Code (as % of total Bank financing)		
Education for the knowledge economy	67	70
Other social development	33	30

E. Bank Staff		
Positions	**At ICR**	**At Approval**
Vice President:	Isabel M. Guerrero	Mieko Nishimizu
Country Director:	N. Roberto Zagha	Michael F. Carter
Sector Manager:	Amit Dar	Michelle Riboud
Project Team Leader:	Andreas Blom	Shashi K. Shrivastava
ICR Team Leader:	Sangeeta Goyal	
ICR Primary Author:	Sangeeta Goyal	

F. Results Framework Analysis

Project Development Objectives (from Project Appraisal Document**)**
To support the production of high quality technical professionals through reforms in the technical/engineering education system in order to raise the productivity and competitiveness of the Indian economy

Revised Project Development Objectives (as approved by original approving authority)
The PDO was never revised during the life of the project.

(a) PDO Indicator(s)

Indicator	Baseline Value	Original Target Values (from approval documents)	Formally Revised Target Values	Actual Value Achieved at Completion or Target Years
Indicator 1 :	Percentage of high quality graduates/ post graduates in relevant and cutting edge technologies			
Value quantitative or Qualitative)	1. Graduates in cutting edge technologies: 35%; 2. Number of Post graduates (total): 6000; 3. Number of Doctorates awarded(total): 250. during 2003-04	50% increase over baseline by 2007-08		1. Graduates in cutting edge technologies: 51%; 2. Number of Post-graduates (total): 11,158; 3. Number of Doctorates awarded (total): 587 during academic year 2007-08.
Date achieved	06/30/2004	03/31/2009		03/31/2009
Comments (incl. % achievement)	Targets for all three indicators for PDO 1 has been achieved or over-achieved (98% for graduates in cutting edge technologies; 172% for number of total post-graduates; and 270% of the target for the total number of doctorates awarded in an academic year)			
Indicator 2 :	Increased involvement of institutions with community and economy			
Value quantitative or Qualitative)	Low: No. of programs= 450; No of beneficiaries= 4000 during 2003-04	Significant: Programs= 3000; Beneficiaries=35000. during 2007-08		Number of Programs=5005; Number of Beneficiaries=251,091 during 2007-08.
Date achieved	06/30/2004	03/31/2009		03/31/2009
Comments (incl. % achievement)	167% of the target for number of programs achieved; and more than 700% of the target for the number of beneficiaries achieved.			
Indicator 3 :	Percentage of graduates employed within one year of graduation/ average annual salary			
Value quantitative or Qualitative)	55%; INR 150,000;	85%; not defined.		76% ; INR 290,000.
Date achieved	06/30/2003	03/31/2009		03/31/2009
Comments (incl. % achievement)	Employment rate (90% of target achieved) has been measured by campus employment which is an underestimate of the overall employment rate; Average annual salary has nearly doubled.			

(b) Intermediate Outcome Indicator(s)

Indicator	Baseline Value	Original Target Values (from approval documents)	Formally Revised Target Values	Actual Value Achieved at Completion or Target Years
Indicator 1 :	Increased professional output (publications, patents, R&D, etc)			
Value (quantitative or Qualitative)	1. Professional Publications: 3800; 2. Patents: 10; 3. R&D Products commercialised: 20 during 2003-04	100% increase		1. Professional publications: 6766; 2. Patents: 28; 3. R & D products commercialized: 74 during 2008-09
Date achieved	06/30/2004	03/31/2009		03/31/2009
Comments (incl. % achievement)	78% of target achieved for professional publications; 180% of target achieved for patents; and 270% of target achieved for R & D products.			
Indicator 2 :	Joint Programs and activities with networked institutions			
Value (quantitative or Qualitative)	Negligible	Significant - target undefined.		Joint R & D: 302; Joint Consultancy: 262; Joint Publications: 1354; Joint Programs for PG courses and PhD: 910
Date achieved	06/30/2003	03/31/2009		03/31/2009
Comments (incl. % achievement)	Significant achievement in terms of numbers of networking activities undertaken			

G. Ratings of Project Performance in ISRs

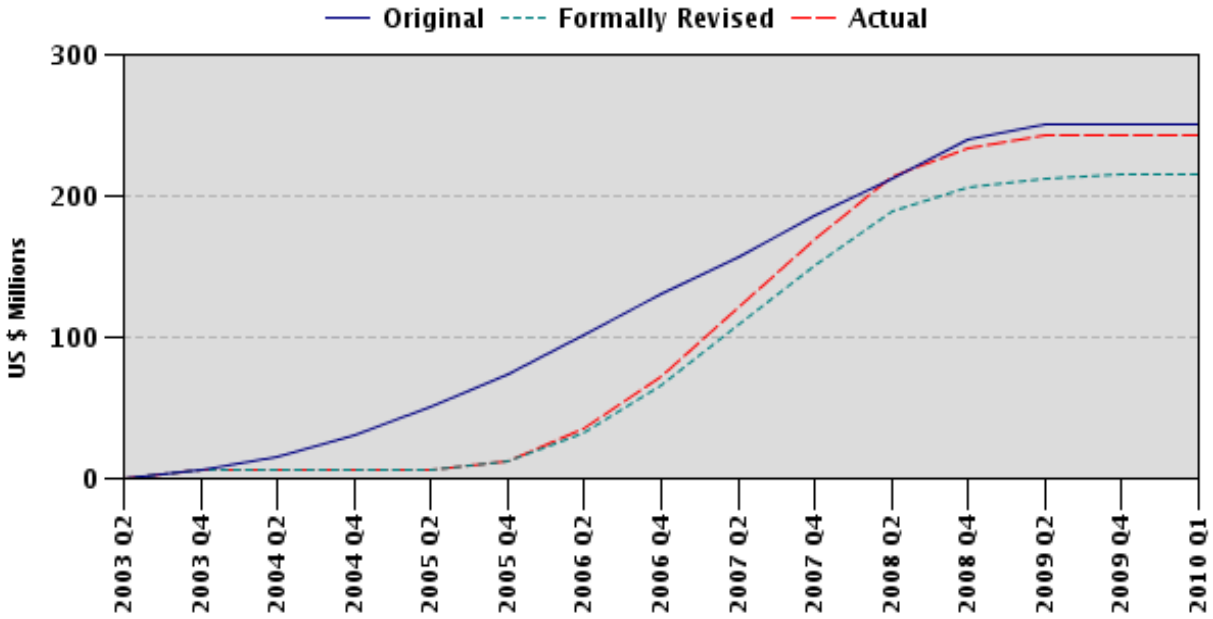
No.	Date ISR Archived	DO	IP	Actual Disbursements (USD millions)
1	02/11/2003	Satisfactory	Satisfactory	0.00
2	06/23/2003	Satisfactory	Satisfactory	6.00
3	12/01/2003	Satisfactory	Satisfactory	6.17
4	05/26/2004	Satisfactory	Satisfactory	6.21
5	11/29/2004	Satisfactory	Satisfactory	6.50
6	02/22/2005	Moderately Unsatisfactory	Moderately Unsatisfactory	6.90
7	08/23/2005	Moderately Unsatisfactory	Moderately Unsatisfactory	19.45
8	01/19/2006	Moderately Satisfactory	Satisfactory	39.57
9	07/13/2006	Moderately Satisfactory	Satisfactory	83.30
10	01/26/2007	Moderately Satisfactory	Satisfactory	123.08

11	04/23/2007	Satisfactory	Satisfactory	146.63
12	10/11/2007	Satisfactory	Satisfactory	194.64
13	04/16/2008	Satisfactory	Moderately Satisfactory	225.14
14	10/06/2008	Satisfactory	Satisfactory	240.56
15	03/30/2009	Satisfactory	Satisfactory	242.97

H. Restructuring (if any)

Not Applicable

I. Disbursement Profile



1. Project Context, Development Objectives and Design

1.1 Context at Appraisal

The Technical/Engineering Education Quality Improvement Project (TEQIP) was prepared during the time of the 9th Five Year Plan (1997-2002) in India whose key themes were strengthening the environment for development and sustainable growth and supporting critical interventions of special benefit to the poor and the disadvantaged. This included strengthening governance systems and enabling the private sector to contribute to long term economic growth. This was a period of improving economic growth for India (>8%) after its liberalization in 1991, its transformation towards a more knowledge-based economy, and increasing engagement with the world economy. For sustaining economic growth, the country had to ensure the competitiveness of its industry in the global market place. This would demand high quality skilled manpower to promote entrepreneurial growth in new fields of industrial endeavor, to improve the productivity of Indian industry in both manufacturing and services.

Rationale for Bank Involvement: According to the Country Assistance Strategy (CAS 2002) for India, the bottlenecks constraining growth in India included a shortage of appropriately skilled and trained personnel. Although India had one of the largest stocks of scientists, engineers, and technicians, the quality of their training from many institutions below the premier institutions such as the Indian Institutes of Technology (IITs) was poor. The publicly funded institutions and universities providing Science and Technology (S & T) education in India were mostly not able to maintain high standards of education or to keep pace with developments in knowledge and technology (World Bank Report No. 20416-IN, September 2000). Keeping the above in view, the Bank Group focused on promoting policy and institutional reforms in the area of technical education covering both public and private institutions to improve the quality of India's pool of technical manpower.

Also, the National Policy of Education (NPE 1986, revised in 1992) of India had identified a set of reforms for the higher education system in the governance and financing of institutions, promotion of excellence through competitive funding, networking of institutions for better utilization of resources, closer interaction with local community and economy, and improved capacity of system management. Combining the thrust of the CAS with the recommendations of the NPE, TEQIP was designed to introduce and implement these reforms in the existing technical education system. TEQIP was also designed to be the first of a sequence of support to this sector, with the objective of eventually moving the production possibilities frontier of the economy outward, and to create the basis for continuous technological up-gradation of the industrial and service economic sectors.

1.2 Original Project Development Objectives (PDO) and Key Indicators (*as approved*)

TEQIP's PDO was "*to support the production of high quality technical professionals through reforms in the technical/engineering education system in order to raise productivity and competitiveness of the Indian economy*." The following key performance indicators were selected to monitor TEQIP and evaluate its achievements:

Outcome / Impact Indicators:

- Improved employment rate and earnings of graduates from participating institutions
- Increased cooperation and resource sharing between institutions
- Improved internal efficiency of the engineering education system
- Increased involvement of institutions with communities

Output Indicators:

- Increased number of postgraduates/research scholars in engineering
- Increased professional outputs (publications, products, designs, patents, etc.) from participating institutions
- Number of joint research, design and development projects, consultancies, training programs etc., conducted by participating institutions

- Increased revenue generation from outreach programs and services (as a percentage of annual recurring expenditure)
- Increased availability of well-trained system/institution managers

1.3 Revised PDO (as approved by original approving authority) and Key Indicators, and reasons/justification

The PDO and KPIs were not revised at any time during Project life.

1.4 Main Beneficiaries

The main beneficiaries of the Project were the students, faculty and staff in 109 engineering education institutions in 13 Indian states and 18 Centrally Funded Institutions (National Institutes of Technology - NITs and NIFFT). Additionally, the Project also benefitted the local community, industry and the private sector and the state and central government departments for technical education. The Project also benefited the sector by making available more potential faculty members, enhanced capacity to do R & D, formal and informal networking between institutions, and building management capacity at the central and state levels. Ultimately, the larger economy benefitted as the supply and quality of technical/engineering graduates increased.

1.5 Original Components (*as approved*)

The PDO was to be achieved through two components:

Institutional Development: This component comprised of three sub-components, namely (i) promoting academic excellence; (ii) networking institutions for quality enhancement and resource sharing; and (iii) enhancing quality and reach of services to the community and the economy. Under this component, qualifying institutions were to be selected as a 'lead' or a 'network' institution and then were to compete with other eligible applicant institutions through specific sub-projects.

System Management Capacity Improvement: This component supported (i) developing a modern management style through training of policy planners, managers, and administrators from the central and participating state governments; (ii) conducting studies at the state and national levels, the findings of which would be used to improve policy and decision-making processes, and implementing reforms; (iii) enhancing performance, quality and efficiency of state audits of institutions; and (iv) establishing structures and facilities for program management at the central and state levels.

1.6 Revised Components

No revision of components took place during Project life.

1.7 Other significant changes

Originally all states were invited to participate, but only six states met the eligibility criteria and joined the Project in 2003. A year later seven more states met the conditions and submitted their proposals - undergoing due appraisal process – and their *Project Agreements* were declared effective in 2004.

Nearly US$ 40 million (14.3%) was diverted to aid the Tsunami disaster victims that struck the southern coast of India in December 2004; however the impact on results was protected due to depreciation of INR towards the SDR which kept the INR Project amount nearly the same as before.

The closing date was extended by 9 months with the revised close date set as March 31, 2009. The extension for the Project was justified to give it time to complete remaining activities keeping in view the initial delays, and to strengthen implementation capacity for the expected second phase of TEQIP. Project management structures at the central and state levels – the NPIU and the SPFUs continued to be sustained and strengthened for implementation of the second phase.

2. Key Factors Affecting Implementation and Outcomes

2.1 Project Preparation, Design and Quality at Entry

TEQIP was an ambitious project, and prepared over a period of 22 months. This was the first World Bank project in higher education in India. However, it was preceded by three successful projects in the technician education sector. The basis for discussions on project design was the National Policy of Education (1986, 1992) and the intentions of the Government of India as stated in the 9th Five Year Plan (1997-2002). The strengths and weaknesses of the technical education sector identified by a Bank study "Scientific and Technical Manpower Development in India (World Bank Report Number 2041 6-IN, Sept. 2000)" provided the analytical underpinnings for project design.

The Project was designed following detailed consultations with and inputs from state secretaries and directors of technical education, principals and faculty and students of Regional Engineering Colleges and other engineering colleges and polytechnics, the Technical Teachers' Training Institutes (TTTIs) and National Technical Manpower Information System (NTMIS) in the Institute for Applied Manpower & Research (IAMR), the All India Council for Technical Education (AICTE), the National Board of Accreditation (NBA), the Planning Commission, and industry and community representatives.

Project design included the use of investment funds to stimulate institutional reforms, i.e. have elements of policy reforms within a SIL with a strong focus on quality and relevance of education, lack of which was increasingly became a bottleneck in the Indian economy. Key institutional reforms promoted by the Project included granting of significant academic, financial, managerial and administrative autonomy, changing the pattern of non-plan (recurrent) funding to block grant, encouraging the establishment of corpus, depreciation, staff development and maintenance funds, and encouraging increasing cost recovery through internal revenue generation. Only those states and institutions that met the reforms-based eligibility criteria were allowed to participate. The Project also focused on increased intake into Post-Graduate (PG) programs and support to Faculty Development, thereby responding to a need that grew into a major shortcoming of the sector during its life. The motivating philosophy guiding the Project was a long-term perspective (15 years) for implementing and sustaining a reform and it put at the fore-front a bottom-up approach of building capacity within the institutions for leadership and asking States to give an enabling environment to this leadership.

No formal Quality Enhancement Review (QER) was done at the time of project design as it was not a requirement at the time the project was prepared but it was peer reviewed by senior Bank experts and the task team took particular cognizance of practices, experience, risks and lessons learnt from the substantial amount of Bank experience supporting tertiary education reforms in Argentina, Chile, Indonesia, Jordan, Romania and Vietnam (performance-based funding, accreditation and management information systems), Brazil (competitive finding and science and technology research), China (renewal and restructuring of science and engineering disciplines and the finding of innovative forms of cooperation, which include partnerships and networks of institutions).

Overall, quality at entry was adequate. However, for a reform based project, there were likely to be political economy, and institutional hurdles, some of which could have been anticipated during the design phase.

2.2 Implementation

Overall, Project implementation was satisfactory. Participation in the Project was voluntary for states and institutions. All states were invited to participate by the GOI in 2002 and 2003. Project agreement was signed with 13 states in two stages – with Haryana, Himachal Pradesh, Kerala, Madhya Pradesh, Maharashtra and Uttar Pradesh in March 2003; and with Andhra Pradesh, Gujarat, Jharkhand, Karnataka, Tamil Nadu, Uttarakhand and West Bengal in July 2004. 132 institutions were chosen through proposal based competition from 300 applicants in two cycles in 2003 and 2004. Later

5 institutions either dropped out or were dropped leaving the final tally to 127 which included 18 Centrally Funded Institutions (CFIs), 57 state financed institutions, 11 state aided institutions, 19 government polytechnics and 22 private institutions. The number of institutions finally covered under the Project was almost double of the number initially proposed. This increased the reach of the reforms and spread the benefits to a larger number of institutions, but reduced the allocation to each institution, thereby reducing their incentives to undertake reforms.

There were delays in implementation in the first two years and the Project was rated as a problem project in March 2005 ("Moderately Unsatisfactory"). Factors that led to delays included: (a) general elections in India in 2004 which slowed down implementation activities; (b) delays in the formation of the National and State Steering Committees which were to oversee and guide project implementation; (c) inadequate staffing of the NPIU and SPFUs which remained a problem through the Project; (d) states did not make adequate budget provisions on time in the initial period; (e) reluctance on the part of states to undertake reforms despite agreements initially which led to delays in states complying with the legal covenants under the Project; and (f) considerable revisions to the institutional proposals of Project institutions took place before they could be finalized.

The Project however has to be commended for picking up tremendously from this point on to acquire a satisfactory rating in the final ISR. Following a meeting held by the Education Secretary in August 2005 during which all states and institutions were strongly advised to implement the Project as per agreements, the Project started to return on the path to progress. Based on the progress achieved by the Mid-Term Review (MTR)/Fourth Joint Review Mission in Nov-Dec 2005, the Project was upgraded to "Moderately Satisfactory" in PDO and "Satisfactory" in implementation. The states renewed their commitments to the reforms, and by the time of the 5th JRM in January 2006, states had significantly complied with the legal agreements, disbursement improved from 3.6% in June 2005 to 17%. Staffing of the NPIU and SPFUs improved. Additionally, 70 experts were appointed by the NPIU and SPFUs as mentors to assist project institutions in implementation. Financial management and procurement requirements under TEQIP, a multi-state project with 127 institutions and a decentralized procurement design, were challenging, which were reasonably met. Fiduciary performance is discussed in detail in section 2.4.

In terms of Project components, the following faced considerable implementation difficulties: (a) legal – compliance of two critical conditions (grant of adequate autonomy and release of funds to institutions as block grants) lagged in most states due to administrative hurdles from the affiliating universities and finance departments of states; (b) Project sub-components – there was lack of clarity on the concepts of the sub-components of "Networking" and "Services to Community and Economy" and implementation was very slow; and (c) reforms – similarly, there was lack of clarity on the reforms to be introduced under the Project by the institutions. With respect to management capacity building in project institutions, the objective was not fully fleshed out and inadequate attention was paid to it by the project institutions. Some key officers and senior faculty were sent for training but a long-term vision could have further strengthened organizational change. Also, faculty vacancies in project institutions were filled very slowly. This meant over-burdening of existing faculty members who were responsible for implementation in addition to their on-going academic responsibilities. Implementation of Project sub-components and reforms improved over time with support from the joint review missions and mentors.

Monitoring and Evaluation (M&E) Design, Implementation and Utilization

Monitoring and Evaluation in the Project is rated as "Satisfactory". The Project was intensively monitored, generating valuable information. There was however scope for paying more attention to the quality of data collected, and to collect data on quality aspects of the Project. The PDO of the Project was clear though ambitiously worded in scope. Project design followed a logical-framework approach, and key performance indicators and intermediate outcome indicators were defined for the PDO, each component and sub-component of the Project respectively. Indicators chosen were closely linked to their referents, and were in most cases specific and measurable. Data on

most indicators were regularly collected. Base-line data was not collected for the Project *a priori* because of competitive selection of participating institutions after Project effectiveness. It became available from the second year of the Project after the group of participating institutions became final. It is likely that estimates at the national or other representation level for KPIs which could have been used provisional base-line data was hard to collect.

The Project was regularly monitored at different levels. Quarterly review meetings were undertaken by state secretaries and the National Project Director (NPD). Ten bi-annual Joint Review Missions (JRMs) by the GOI, the Bank and state officials took place during Project duration. National and international experts were also made part of the JRM. Mechanisms and processes were established for monitoring key dimensions of the Project including reforms, activities, quality and administrative/managerial efficiency audits, compliance with MOU conditions and implementation of the Tribal Development Plan (TDP). Institutions also prepared quarterly reports on progress in project and reforms implementation, internal audits and compliance with conditions of Memorandum Of Understanding (MOU) and submitted the same to their respective Board Of Governors (BOG) and SPFU (in case of centrally funded institutions to the Bureau of Technical Education (BTE) in the Department of Secondary and Higher Education (DSHE) of Ministry of Human Resources Development (MHRD), GOI. On-going formative evaluation activities were made part of Project M & E through a team of mentors/auditors, who were accomplished professors and administrators in the technical education field, and through student and faculty satisfaction surveys. Findings from all the audits were actively used by all institutions to make improvements.

Project M & E while intensive could have gained further from ensuring that data did not suffer from double counting, for example those pertaining to joint activities between institutions. Quantitative data if complemented with qualitative case-studies would have helped capture ‘quality’ aspects; as most indicators captured only magnitude (“numbers of…”) or binary information (“Yes/No”) in case of reforms. Furthermore, an impact evaluation built ex-ante into Project design would have allowed the estimation of outcomes attributable to the Project with greater confidence.

2.3 Safeguard and Fiduciary Compliance

Safeguards compliance was “Satisfactory” under the Project. Two safeguard policies were triggered by the Project – Environmental Assessment (OP 4.01) and Indigenous Peoples (then OD 4.20, now OP 4.10). No environmental risks were forecast for the Project at appraisal (category “C” project). Consequently, no environment assessment was undertaken. For indigenous people, a Tribal Development Plan covering the needs of faculty and students belonging to Scheduled Castes (SC) and Scheduled Tribes (ST) was prepared by GOI. Institutions provided details of activities to be undertaken under the Tribal Development Plan (TDP) in their proposals which were monitored for compliance regularly in all the joint review missions. Activities included establishment of book banks for students belonging to the SC/ST/OBC categories, special remedial classes, guidance for taking entrance exams, counseling, communication and soft skills, preparation for job interviews and language labs. More than 1700 such activities were carried out during the life of the Project and benefitted a sizable number of students (a total of 0.2 million participations took place in these activities with students attending multiple activities).

The Project’s fiduciary compliance is rated as “Satisfactory”. This rating is based on the overall Project performance on Financial Management (FM) and Procurement. Fiduciary compliance was a challenging task, as expenditure under the Project was to take place largely in a decentralized manner in more than a hundred institutions in 13 states, and in 18 Centrally Funded Institutions.

The Project has performed reasonably well considering the scope of FM tasks. States and the NPIU were to submit consolidated audit reports every year under the Project (a total of 14 annual audits). Generally, Annual Audit reports were received regularly and timely. Suggestions made by auditors in these reports helped strengthen the Project’s FM system. In the earlier years, there were discrepancies between the audit reports and the format features agreed upon; these were smoothed out and the

quality of reporting improved considerably over time. The Project was (a) guided by a comprehensive FM manual which was revised during 2006-07; and (b) FMR based reporting was generally timely and accurate; though the Project used SOEs as a basis for disbursement. On the other hand, NPIU capacity has been a concern in the last year of the Project when the position of the Consultant Finance position remained vacant. Also, in the initial stages of the Project, regular training was provided to Project participants; however, since 2005 training became inadequate and did not respond to staff changes and/or new institutions.

Procurement also remained a challenge for the Project for the first few years, given the scope. Post-procurement reviews carried out since 2006-07 to 2008-09 showed improvements in procurement management, oversight and supervision over time. Initial post-procurement review of 550 (out of 4500) contracts of 2005-06 in all Project states and of a select sample of CFIs and state institutions recorded serious deviations from procurement guidelines such as: (a) unjustified splitting of contracts by some institutions, (b) inadequate recording of reasons for rejection of lower bids, (c) long delays in settlement of payments, (d) the Bank's approval not sought for rejecting all bids and rebidding, and (e) possible use of fraudulent practice by some contractors in local shopping.. Based on a post-review of civil-works, claims submitted by one institution in Karnataka were withdrawn due to unacceptable deficiencies. The issues were discussed with all the SPFUs and NPIU, and a fiduciary workshop conducted in 2008 addressed the causes for deviation and a *self-audit* system for procurement by SPFUs and NPIU was introduced. As a result, post-procurement review of 2007-08 conducted in 4 states and 3 CFIs showed significant improvement in overall management with deviations reported in less than 15% of sampled contracts. A post-review conducted in 2008-09 in 6 states and 8 CFIs covering 350 contracts showed even fewer deviations and no case of misappropriation. The main procurement challenge for the Project was ensuring consistency in processes and procedures followed by a large number of participating institutions spread across the country and the inadequate capacity at the SPFU level to provide appropriate technical support and effective supervision. The NPIU has to be commended for its efforts at capacity building in the last 2 years which have resulted in positive outcomes and the Project achieving a 'satisfactory' rating for procurement.

2.4 Post-completion Operation/Next Phase

TEQIP is the first of a series of Projects for the long term reform of the technical education sector of the GOI. The second phase of support to the sector is currently under preparation and is likely to become effective in January 2010. The second Project which incorporates the lessons learned from the first phase will extend the key successful features of the first Project to states and institutions not covered under the first phase, including economically lagging states. In response to a growing need in technical/engineering education sector, the second Project will also lay great emphasis on faculty development, post-graduate education, and research and development and innovation. The NPIU and SPFUs established under the first Project remain operational for the period between the end of the first Project and start of the second. Akin to the first Project, participation in the second phase by states and institutions will be voluntary and selection of institutions from eligible states will be competitive. The second phase of TEQIP will maintain the long-term focus on reform implementation and capacity building at the institutional, state and national levels.

3. Assessment of Outcomes

3.1 Relevance of Objectives, Design and Implementation

The Project was highly relevant. The Project design supported reforms based investment that made the institutions more autonomous and accountable to their self-determined goals of excellence. It responded to the country's need for excellence in engineering education and facilitated the production of skills increasingly being demanded by the growing sectors of the economy such as IT and IT based services, telecommunications and pharmaceuticals. It focused on quality based employability of undergraduate education, up-scaling and upgrading of PG education with view to filling faculty needs, and promoted demand-driven R &D.

3.2 Achievement of Project Development Objectives

The Project performed satisfactorily in the achievement of its overall Project Development Objective (PDO) which was "increase in the production of high quality graduates". There was a strong positive trend in all the outcome/impact and output indicators. This section will (a) examine the achievement of the three key performance indicators and two intermediate outcome indicators specified in the PAD and the ISRs, (b) summarize the achievements of outputs by components, and (c) assess the link between outputs and outcomes. A more detailed description of Project outcomes and outputs by components is provided in Annex 2.

Achievement of PDO: KPIs and Intermediate Outcomes

PDO 1: Increase in the percentage of high quality graduates/post-graduates in relevant and cutting edge technologies. By the end of the Project, there was a significant increase in the share of students graduating with honors/distinction. Between 2003-04 and 2007-08, the share of students passing with high grades increased to 50% for UG and 51% for PG from their base-lines of 35% and 36% respectively, thereby attaining 100% of target.

PDO 2: Increased involvement of institutions with community and economy. More than 1887 programs were conducted by project institutions for the local community, the unorganized labor force and industrial workers, benefitting nearly 0.18 million people during 2007-08. This was an improvement of 471% for number of programs and 4500% for number of beneficiaries over the base-line (during 2003-04) and 63% and 514% achievements of the targets set respectively. The shortfall in achieving the first target and the over-achievement of the second target was due to fewer programs covering a large number of beneficiaries were undertaken. Over the Project period, 1,288 technologies were also transferred to the community.

PDO 3: Percentage of graduates employed within one year of graduation/Average Annual Salary
Campus placement rates, used here as a lower bound indicator for overall employment rate, nearly doubled for UG students, from 41% to 76% (89% of the target) and more than doubled from 25% to 56% (66% of the target) for PG students. The average annual salary for those employed through campus placement increased 74% in nominal terms for UG students and 88% for PG students. In real terms, salaries increased 40% and 51%, for UG and PG students respectively. Improvements in employment rates and wages were supported by a booming Indian economy.

Intermediate Outcome Indicator 1: Increased professional output (publications, patents, R &D etc.)
Professional outputs of project institutions increased significantly over the Project period. Professional publications increased from 3800 to 6328 per year (67% of target), other academic products such as books and chapters increased from 404 to 1144 per year (183% of the target), patents obtained and applied for increased from 22 to 34 per year (55% of the target) and 86 per year (617% of the target), and R & D products commercialized increased 29 to 66 per year (124% of the target).

Intermediate Outcome Indicator 2: Joint programs and activities with networked institutions
Networking activities were very few in number at the start of the Project, and the target was to increase them significantly. In 2007-08, externally funded R & D projects increased by 337%, joint consultancies increased by 143%, joint publications increased by 389%, joint training and continuing education programs increased by 789%, joint research guidance for Masters' and Ph.D. programs increased by 463% and Joint Seminars etc increased by 882% over the base-line.

Achievement of Outputs by Components

Component 1 was successful in Promoting Academic Excellence, Promoting Networking among institutions, and Enhancing Institutions Outreach by way of Services to Community and Economy. By the end of the Project, all proposed civil works, purchase of equipment and goods had been completed. The Project was successful in keeping its focus on quality and not on infrastructure per se. The share of expenditure on civil works was 7.5%, less than the allotted 10%. Modern classrooms and laboratories were built or refurbished, libraries were expanded and modernized with advanced ICT

facilities and machinery/equipment more aligned with industry needs and cutting edge research and technology were procured under the Project.

By 2007-08, more than 30,000 faculty and 13,000 staff short-term and long-term training instances had taken place. Faculty and staff members received training for an average of 8 and 7 days respectively; both improving from the earlier average of 4-5 days. A faculty development review was carried out as part of the ICR. Findings from the review showed that training for faculty consisted of a range of activities including attendance in seminars and conferences, pedagogical training and management development programs.

93% of the target UG and PG programs proposed for restructuring/revision/reorientation, and 71% of new UG and 66% of new PG programs proposed to be introduced were completed. A total of 563 additional faculty positions were proposed by the institutions in their CIP of which 41% were sanctioned. However, of the sanctioned posts, only 141 positions (61% of sanctioned positions and 25% of proposed positions) were filled of which 48 were by contract faculty.

There was substantial scaling up of post-graduate programs to meet existing faculty shortages. Enrolment in Master and Ph.D. programs increased 50% and 69% respectively from the base-line year enrolment. In addition to services to community and economy, project institutions organized more than 1800 activities to help students from disadvantaged backgrounds.

Component 2 was successful in introducing the Practice of Modern Management Style in project institutions, Undertaking Policy Studies, Enhancing Performance, Quality and Efficiency of State Audits of Institutions, and Establishing Program Management Structures at the central and state levels. Under TEQIP, more than 1,200 training programs on planning and management skills were organized in which 13,531 officers participated. Participants included members of SPFUs, Directors, Heads of Departments and Senior Faculty members from project institutions. All project institutions have completed seven student and faculty satisfaction surveys and seven performance audits. Several states have undertaken internal quality audits. Himachal Pradesh and Uttaranchal have done internal audits in all institutions while Karnataka, Andhra Pradesh and West Bengal have done so in two-thirds of their institutions. West Bengal has even developed a formal benchmarking and results framework.

Links between Outputs and Outcomes

It is highly likely that Project inputs, policies and reforms supported by the Project have contributed significantly to the attainment of the PDO, and without the Project these improvements would have been smaller and slower paced. More trained teachers and technical staff translated into better teaching and learning in the classrooms and laboratories. Staff training included a large number of laboratory technicians to improve the quality of laboratory work. Curricula were restructured/revised/reoriented and new programs were introduced again in light of new skill needs. The combination of revised/restructured/reoriented and new programs, faculty and staff training and modern infrastructure and facilities provided a combined impetus for raising the quality of teaching and learning.

Under TEQIP a much greater focus was given to the relationship between academic institutions and the surrounding community and economy. A large number of activities were conducted with 225,000 beneficiaries. Institutions paid more attention to placement of students and there was awareness among employers of TEQIP and its objectives. A growing economy also aided a higher placement rate of students. Enhancement of post-graduate education, research and consultancy activities had a direct bearing in the increase in R &D outputs as these were a special focus of TEQIP. Networking outputs and services to the community and economy were TEQIP sub-components. These activities were introduced as innovations under the Project and started almost from a zero base. Certain institution level activities such as book banks and remedial teaching for disadvantaged students were also done in most of the project institutions for the first time under the Project. The success of these

activities was supported by an environment of enhanced autonomy and greater institutional flexibility and efficiency achieved through reforms. Reforms at the state and institution levels were legal covenants of the Project, and therefore can be clearly considered TEQIP outcomes. A few of the activities intended to enhance academic flexibility were already prevalent in some institutions, but others made these changes under TEQIP and most likely would not have done so without it. From statistical analysis of the satisfaction scores of students from all 5 audits, we find that ***19%*** *of the variation in satisfaction scores can be attributed to the Project as the model equalizes the underlying differences between institutions*.

3.3 Efficiency

The Project supported 127 institutions across India to improve both their internal and external efficiency. Internal efficiency, though variable across institutions and falling short of the target, nevertheless increased due to higher enrolment, better internal processes for conducting admissions, examinations, and declaration of results. The details are provided in Annex 3. Internal efficiency also increased due to increase in faculty productivity, driven by faculty development activities and by improvement in infrastructure and equipment which could be used both for better teaching-learning and better quality R & D.

An IRR analysis described in more detail in Annex 3 shows that the rate of return on the Project was 15%. This compares favorably with the prospective IRR analysis done at the time of Project appraisal, and with the rate of return on a typical asset in the general economy. This is also likely to be an under-estimate as it uses improved labor market outcomes of students as the only benefits, and does not take into account the increased availability of more and better trained faculty, the enhanced institutional capacity to do R & D, and the greater stimulation to economic growth.

3.4 Justification of Overall Outcome Rating

Rating: **Satisfactory**

The **Satisfactory** rating is justified given successful achievement or over-achievement of most outcomes. The outcomes have resulted from reforms, completion of all investment activities and good utilization of investments, improvement in faculty quality, improvement in the research and development productivity of institutions, networking among institutions, and services to community and economy. Even where there are shortfalls, these are innovations for the sector (networking and services to community and economy) and take time to mature. Despite their newness, a large number of beneficial activities were completed.

3.5 Overarching Themes, Other Outcomes and Impacts

(a) Poverty Impacts, Gender Aspects, and Social Development

The Project was expected to influence poverty indirectly through improvement in the competitiveness of the Indian economy by improving the quality of engineering skills, which would contribute to higher growth. Poverty was directly addressed to some extent through the sub-component of services to the local community whereby faculty and students of participating institutions could help them through problem solving and transfer of technology. The Project directly addressed gender and social aspects through its Tribal Development Plan according to which institutions would propose actions to help academically weak students from SC/ST/OBC backgrounds and girls, and also pro-actively fill student and faculty positions reserved for women and SC/ST/OBC candidates. Under the TDP, nearly 1,800 activities were conducted by project institutions over the Project period, benefitting 162,000 male and 63,000 female students. The most common activities undertaken by institutions were establishment of book banks, provision of remedial teaching, awareness raising workshops and lectures. While, case-studies were not undertaken to assess how beneficial these activities were for their intended beneficiaries, lack of books and remedial teaching have been identified as real constraints for the academic well-being of students from these groups. Thus, it can plausibly be assumed that these activities had a positive impact on students belonging to disadvantaged groups. The Project also monitored steps taken by institutions to fill student seats reserved for these groups

and for a more equitable representation of these groups among faculty members, though no specific strategy was agreed on under the Project for these tasks. Data is not available to evaluate the performance of project institutions on filling reserved seats.

(b) Institutional Change/Strengthening

The Project contributed substantially to institutional strengthening, institutional change and institutional capacity building. While achievement has been variable across states/institutions, the Project has to be lauded for the significant strides it has made in overcoming the inertia of decades of resistance to change. All the reforms in the Project were directed towards institutional change – academic, financial, administrative and managerial autonomy of institutions, establishment of staff, corpus, maintenance and depreciation funds for institutional development and maintenance, leadership through the Board of Governor, participatory decision-making and delegation of financial and administrative powers to senior officers with accountability, and introduction of internal quality assurance mechanisms. Many other institutional reforms were also introduced to improve the academic efficiency and productivity of project institutions such as flexibility in admission, choice of courses, student and teacher performance evaluations, faculty incentives to participate in R & D and consultancy, and recognition of faculty merit among others.

Accreditation of Programs: The Project emphasized accreditation which is a quality assurance mechanism that provides certification from a competent authority that programs meet minimum quality standards. By the end of the Project, 93% of eligible Bachelors/Diploma (out of 811) and 83% of eligible Masters/Post-Diploma programs (out of 566) had obtained or applied for accreditation from the National Board of Accreditation (NBA).

Autonomy: Research now shows that autonomy status of institutions is significantly linked to the quality of education it offers and research productivity. The status of autonomy at the end of the Project was - full and substantial academic autonomy granted to 60% of the institutions, full financial autonomy to 80% of the institutions, full managerial autonomy to 80% of the institutions and full administrative autonomy to 80% of the institutions.

Block Grant: Block grants complement autonomy by allowing institutions to align expenditure to their self-determined goals for institutional development. There were considerable shortfalls in this activity. 8 of the 13 states granted partial discretion over funds to non-private project institutions. Haryana was the only state to pass a government order instituting block-grants fully. Block-grants were not instituted in any of the CFIs.

Establishment of Four Funds: Under the Project, the institutions were to establish four institutional funds for continuous improvement and sustaining gains after the Project closes through the availability of resources at the institutional level. The Project achieved over 90% of the targets under this activity: 115 (93%) institutions have established a corpus fund; 112 (90%) institutions established a staff development fund; 112 (90%) institutions established a depreciation fund; and 113 (91%) institutions established a maintenance fund.

Internal Revenue Generation (IRG): Internally generated revenues (IRG) increased by nearly 30% in nominal terms during the Project period. Much of the increase came from tuition sources due to increase in the number of students (relative to student expenses). Institutions were variably successful in generating non-tuition IRG as fewer than 50% institutions reported increase in IRG at the end of the Project. The share of IRG from non-student sources averaged around 20% through Project life. 75 of the 102 or 75% of the non-private institutions reported that they could retain tuition income, and all the non-private institutions other than CFIs reported that they can retain all the non-tuition internal revenue generated. For some government funded institutions, the IRG retained is however adjusted against the recurring expenditure of the institutions.

Board of Governors (BOG): BOGs are critical elements in a more autonomous governance structures. For the effective exercise of autonomy, each project institution was to establish a Board of

Governors who would oversee and guide institutional development. By the end of the Project 122 institutions (96%) had established a BOG whose members included well-known academics and industrialists. The number of times a typical BOG met every year increased from 1-2 in the beginning of the Project to 2-4 towards Project end.

Academic Reforms in Institutions: Under the Project a series of academic reforms were to be undertaken to improve the internal efficiency of institutions and to make the academic process more flexible for students, such as having systems of credit exemption, credit transfers, offering a greater choice in elective subjects and a more flexible pace of learning: by Project end, 99% institutions had implemented the semester system; 65% institutions had implemented the credit system for UG/Diploma programs; 95% institutions reported offering a wide range of electives to UG or PG students; 44% institutions reported offering a flexible pace of learning to students; 40% institutions reported offering credit exemptions; and 41% institutions reported offering admissions to students with backgrounds different from that of regular admissions.

(c) Other Unintended Outcomes and Impacts (positive or negative)

The Project has been successful in having a strong demonstration effect which is evidenced from the extension of specific reforms to non-project institutions by many states. The state of West Bengal has introduced many of the academic and non-academic institutional reforms (including financial reforms such as block-grant, IRG generation and retention and setting up of the four funds) introduced under TEQIP to *all* publicly funded non-TEQIP institutions. Similarly, the state of Karnataka has introduced many of the TEQIP academic reforms to other institutions, including autonomy, establishment of BOG, and delegating of powers to Heads of Departments and senior faculty. Since 2007, the state of Haryana has adopted an 'autonomy policy' of granting autonomy to well-performing institutions. It has also contracted academic auditors for all public technical education institutions. The state of Andhra Pradesh has created a performance measurement system derived from TEQIP for its state-wide technical education system.

3.6 Summary of Findings of Beneficiary Survey and/or Stakeholder Workshops

Survey findings show that beneficiaries/stakeholders have expressed high satisfaction with the Project. Seven student and faculty satisfaction surveys were conducted by project institutions at intervals of six months. The first of these were done in 2005 and the last in 2009. On a scale of 1 to 10, the average student satisfaction score increased from 6.67 to 8.5, i.e. by 27%, over the life of the Project. This is quite a large improvement; international student satisfaction surveys show that even an improvement of 10% is significant. An implementation survey was conducted in 2008 where implementers at project institutions and SPFUs were asked to rate the Project. A majority of the respondents expressed a high level of satisfaction with the overall Project, its design and implementation. There was also an overall high level of satisfaction among the respondents with the support provided by NPIU/MHRD, SPFUs and the World Bank. The respondents also identified certain areas for improvement with respect to Project design and implementation. These surveys are discussed in greater detail in Annex 5.

4. Assessment of Risk to Development Outcome

Rating: Moderate

The overall risk to development outcome is rated as "Moderate". The higher education, and in particular engineering education, reform agenda has acquired greater urgency among the leadership of the country. It is also a key focus of the 11th Five Year Plan (2007-2012) and this is likely to continue in the next one. All states have expressed their desire to participate in the second phase of support to the sector and therefore are unlikely to reverse reforms overall.

Firstly, investments in faculty, equipment and civil works will likely pay-off for the next 5-20 years. Continued investment in faculty development, equipment and buildings will require sustained funding from the government which is likely to be forthcoming. However, continuation of special activities (services to community and economy, TDP and networking) are not necessarily likely to continue

unless funding and political attention continues from the state governments. Secondly, the policy reforms in terms of autonomy are likely to not to be reversed. Few institutions will give back the power to government, and few governments will take back the power unless mismanagement takes place. The institutions with increased powers are likely to have become dynamic through the leadership and change in BOGs that will continue to push for improvements. However, to continue the reform process and broader introduction of modern educational policies, such as accreditation and financing based upon results, are likely to require more impetus and implementation to firmly take root in the engineering education system.

5. Assessment of Bank and Borrower Performance

5.1 Bank Performance

(a) Bank Performance in Ensuring Quality at Entry

Rating: **Satisfactory**

The performance of the Bank is rated "Satisfactory". There was continuity in the Bank team during the preparation through the implementation phase. As discussed earlier, the Project design was based on extensive consultations with stake holders, had strong linkages with the country's own priorities and policy framework for the sector, and included good practice from similar projects in other developing countries. It included the Tribal Development Plan for equity assurance. Project impact could have been improved if the design had anticipated some of the administrative and bureaucratic hurdles encountered in implementing reforms.

(b) Quality of Supervision

Rating: **Satisfactory**

Quality of supervision by the Bank is rated "Satisfactory". Supervision provided by the Bank was timely, regular and technically sound. There was continuity in the Bank team for most of project period, and there was a smooth transition to the new task team leader in the last two years of the Project. Much of the Bank's supervision team was based in the country allowing for frequent informal need-based consultation with and feedback to the NPIU. For the problems that arose during the slow start to the Project, full support was given by the Bank team in identifying problems and their solutions to the Government and NPIU. Once the NPIU and the Government's Project team became stable and acquired more personnel, the Bank team supported them in focusing on implementation and development outcomes.

Reporting: Bank reporting of Project performance in the PSR and ISRs of the development outcomes and implementation progress is comprehensive. There were no inconsistencies between the ratings given for outcomes, implementation progress, fiduciary and monitoring and evaluation. There is some inconsistency in the units in which data on KPIs and intermediate outcomes were reported in a couple of ISRs.

Fiduciary: The challenge of procurement in this Project was to ensure that decentralized competitive bidding by 18 central institutions and 109 institutions in 13 states was correctly carried out with support from the Bank's procurement team. Appropriate actions were taken based on findings from the post-procurement reviews. Focus of Financial Management during the Project has been two fold; looking at fiduciary aspects as well as capacity building of key Project participants. This included assistance in modification of the Financial Management Manual and reporting formats, participation in training sessions, review of audit reports and flagging of issues to the Government and recommendation on remedial actions.

Monitoring and Evaluation: Extensive support was given by the Bank team in operationalizing the Results Framework. The Bank team continuously flagged the issue of the quality of data to the government as recorded in the ISRs. The Bank team helped the Project teams at the centre and state

levels in effective use of the satisfaction surveys, initiated self-assessments by project institutions and supported the NPIU in undertaking a post-Project case-study based Project evaluation.

(c) Justification of Rating for Overall Bank Performance
Rating: **Satisfactory**
Overall Bank performance is rated "Satisfactory" in Quality at Entry and in Supervision as described above.

5.2 Borrower Performance
(a) Government Performance
Rating: **Satisfactory**

The Department of Higher Education in the Ministry of Human Resource Development (MHRD) was responsible for project implementation through the National Project Director. The Government's ownership and commitment to the Project was demonstrated when in 2005, it took strict measures to bring the Project back on the path to progress. The government's Project team underwent change, and efforts were made to increase staff numbers of the NPIU. There were close links between the MHRD and NPIU through the Project, and participation of the former in all interactions with the Bank team. This facilitated easy communication flow. The MHRD's own technical team could be strengthened in future projects as that will add greatly to speed of implementation and Project impact. The MHRD through NPIU was also responsible for supervising implementation of the project in Centrally Financed Institutions (CFIs). Except for two institutions, the overall performance of the CFIs was satisfactory. The CFIs were not given block-grants and had no clear permission to give vacancies for faculty and staff.

(b) Implementing Agency or Agencies Performance
Rating: **Satisfactory**

The National Project Implementation Unit performed satisfactorily. The outcome of the Project was satisfactory after a very slow start, and the NPIU facilitated implementation and assisted the states in speeding up progress. The NPIU arranged for (a) orientation workshops in Project concept for mentors/auditors and (b) procurement and FM training workshops for the states and institutions. Dissemination of information was also done through NPIU's website which was regularly updated with all the new material – reports and studies – that became available. As described in greater detail in Annex 5, states and institutions implementing officers rated the NPIU highly on its performance, collaboration, timeliness and adequacy of guidance, responsiveness to inquiries, and support on procurement and financial management procedures. NPIU's work was, however, hampered due to shortage and turnover of staff. A Project of this large size requires a proportionately adequate number of people to oversee its different aspects – technical and academic, governance reforms, monitoring and evaluation, and fiduciary. All these different expertise were carried out by the same small group of, albeit very committed and dedicated, Project team.

The average rating for State governments' performance is satisfactory. State governments implemented the Project through their State Project Facilitation Units (SPFUs). Active monitoring and Project facilitation by individual state governments was crucial for success. Project implementation and outcomes overall for the states was satisfactory, though there were high, medium and low performers. Annex 2 provides a comparative performance of states across different Project dimensions. Initially, states were reluctant to undertake reforms and delayed budgetary provisions but motivated by the central government, states reiterated their commitments to the legal covenants of the Project, and While, the SPFUs work suffered from staff shortage and turnover, still project institutions rated their SPFUs highly with respect to overall guidance and support. State level institutions could have benefited more from speedier facilitation of granting of academic autonomy, provision of block-grants, sanctioning of faculty positions and filling existing vacancies in project institutions.

(c) Justification of Rating for Overall Borrower Performance

Rating: **Satisfactory**

The overall rating for borrower – government and implementing agencies - performance, is rated satisfactory as described above.

6. Lessons Learned

In this section, we first provide a list of general lessons emerging from the Project. A list of specific lessons is provided in Annex 10.

- Strong ownership of the central and state governments is essential to successful project implementation, especially if the project is designed to do *the right things at the right time* which has been the case with TEQIP.
- The instrument chosen for the Project, a reforms-based Specific Investment Loan (SIL) embedded, worked well in India where there were a large number of states and institutions competing for project funds.
- Competitive funding of institutions is a flexible tool that can be used to support changing sector priorities by selecting appropriate eligibility and selection criteria. Voluntary participation by states to implement reforms increases the likelihood of their success.
- Innovations introduced under reform-oriented investment projects can have spill-over effects on parts of the sector not under the purview of the Project. Similarly, strong ownership coupled with demonstrable positive project outcomes can create a receptive platform for further innovations.
- Implementation performance depends on the availability of adequate full-time staff and their timely training in implementation procedures; ideally prior to project effectiveness. Staff continuity should be maintained as much as possible to reduce delays caused by unfilled posts and time taken by new staff to learn the job.
- Decentralizing project implementation to the institution level can increase participation but execution can get delayed because it takes time to train all the implementers in the proper procedures. Additionally, good communication mechanisms between the institutions and state level implementing agencies and the state and central level agencies, if absent, can delay or even derail implementation.
- Technical assistance should be considered when projects involve new approaches such as strategic planning and results-based management. Technical assistance should also be considered with respect to reforms supported by the project which generally require a fair-bit of restructuring and renegotiation of relationships between different nodes – for example, the relationships within an institution between management, faculty and students, between institutions (in the case of networking for example) and between institutions and apex bodies (such as the affiliating universities or the AICTE, NBA and UGC in the case of TEQIP).
- Where project outputs depend on cooperation from institutions outside the project, there may be uncertainty associated with results. These problems can be overcome if all institutions necessary for change are formally made part of the project. Sector rigidities and inefficiencies may also stem to some extent from the quality of functioning of these institutions which have influence over the whole sector.
- A well designed results framework coupled with a monitoring and evaluation system should not go through substantive changes during project implementation. All efforts must be made to ensure that the data being collected are complete and valid. If a significant amount of data is self-reported, there should be some mechanism for verification of the information provided. This can become important not only for a true assessment of changes taking place, but also to learn valuable lessons from the experience of implementing reforms.
- Impact evaluation should be made part of project design to ascertain project outcomes across comparable ‘treatment’ (project) and ‘control’ (non-project) groups of institutions. On projects that support large reforms, it is difficult to isolate the contribution of the project. However, because of the lags inherent in the education process, the outcomes and impacts of many investments in education are often only apparent sometime after the project has closed.
- Any reform-based project in the technical/engineering sector cannot omit private institutions who dominate as providers. Private aided and unaided institutions used the resources provided under the project well. However, given their relative unfamiliarity with public procurement methods, they may need greater supervision and training.

- States are generally reluctant to provide public funds to private institutions. To ensure smooth implementation, co-financing arrangements between states and private institutions should be agreed to up-front.
- Most engineering colleges and polytechnics are geared towards teaching, especially undergraduate teaching. More disaggregated data would have allowed a better assessment of how reasonable it is to have a uniform set of indicators across different institution types.
- Measurement of outcomes relating to student and faculty competency is a challenge. Employment rates and salaries are determined by many factors other than quality of skills. Direct measurement of student and faculty competency is difficult to design. With a diversity of institutions, attainment of honors and distinction relate students to their peers in the same institution and there is also the risk of grade inflation as an unintended incentive of the project.
- It is not easy to measure outcomes related to institutional strengthening and capacity building, especially when the aim is change in institutional culture. Similar, it is challenging to measure changes in the teaching-learning process.
- On fiduciary aspects, an important lesson learned is that as much attention is required on the capacity building issues as on basic fiduciary issues. In this project it was noted that in states where attention to capacity building remained weak, many internal control issues continued to be identified (reported through annual audit reports) year after year. With view to the large spread of the project and involvement of a large number of institutions, it has been recognized that for any subsequent project there needs to be constant attention to training at all levels (states as well as institutions) by dedicating an officer for this purpose.

7. Comments on Issues Raised by Borrower/Implementing Agencies/Partners
(a) Borrower/implementing agencies

Borrower's (comments and) ICR are attached in Annex 7, which reinforce the findings of this ICR.

(b) Cofinanciers
NA

(c) Other partners and stakeholders
(e.g. NGOs/private sector/civil society)
NA

Annex 1. Project Costs and Financing

(a) Project Cost by Component (in USD Million equivalent)

Components	Appraisal Estimate (USD millions)	Actual/Latest Estimate (USD millions)	Percentage of Appraisal
1.1.INSTITUTIONAL DEVELOPMENT THROUGH COMPETITIVE FUNDING: -- PROMOTION OF ACADEMIC EXCELLENCE -- NETWORKING O	304.50	308.20	101.20
2. SYSTEM MANAGEMENT CAPACITY IMPROVEMENT	9.50	6.91	72.71
Total Baseline Cost	314.00	315.11	100.30
Physical Contingencies	0.00	0.00	0.00
Price Contingencies	0.00	0.00	0.00
Total Project Costs	314.00	315.11	100.30
	0.00	0.00	.00
	0.00	0.00	.00
Total Financing Required	314.00	315.11	100.30

(b) Financing

Source of Funds	Type of Co financing	Appraisal Estimate (USD millions)	Actual/Latest Estimate (USD millions)	Percentage of Appraisal
Borrower		64.00	64.19	100.37
International Development Association (IDA)		250.00	250.92	100.36

Annex 2. Outputs by Component

In this annex we provide more detailed information on outcomes and a summary of outputs by components. Where data is available, we also provide information by states and CFIs. *Data reported here are taken from the 10 Joint Review Mission Reports and from year-wise national level data on outputs and outcomes provided by the NPIU.*

Project Outcomes: The development objectives of the Project were met overall. Of all the indicators that were followed, only 3 fell short of their targets. For the rest, the targets were either fully achieved or over-achieved. The achievements in PDO are described in tables 2.1-2.5.

Table 2.1: Share of students graduating with distinction/honors

Indicator	Base-line 2003-04	2004-05	2005-06	2006-07	2007-08	Target	% Achieve-ment of Target
Students Graduating with Distinction/Equivalent UG (%)	35	37	38	41	50	50	100
Students Graduating with Distinction/Equivalent PG (%)	36	38	39	41	51	50	100

Table 2.2: Services to Community and Economy

Indicator		2003-04	2004-05	2005-06	2006-07	2007-08	Apr - Sep 2008	Total	% Increase in 2007-08 over the base-line
Number of Programs Conducted	Community	294	821	1385	1133	819	439	4891	278
	Unorganized labor force	84	179	439	733	660	352	2447	785
	Industry personnel	82	204	387	427	401	193	1694	489
	Total	460	1204	2211	2293	1880	984	9032	409
Number of technologies transferred to the community		48	91	240	331	316	131	1157	658
Number of beneficiaries from skill-oriented programs for the community and the organized labor force		3050	10254	31002	47481	177652	59954	329393	582

Table 2.3: Labor Market Outcomes of Graduates from TEQIP Institutions

Indicator	Base-line 2003-04	2004-05	2005-06	2006-07	2007-08	Target	% Achievement of Target
Campus Placement Rate UG* (%)	41	52	61	68	76	85	89
Annual Average Salary UG (Million Rupees)	0.166	0.217	0.282	0.285	0.290	-	
Campus Placement Rate PG (%)	25	31	41	51	56	85	66
Annual Average Salary PG (Million Rupees)	0.19	0.29	0.32	0.34	0.36	-	

*Campus placement rate refers to the percentage of students who get placed in employment through placement activities of the institution. It is a lower bound on the overall employment rate which includes students getting placement through their own efforts.

Table 2.4: Research and Development Outputs

Indicator	2003-04	2004-05	2005-06	2006-07	2007-08	Apr 2008 - Sep 08	% Achievement of Target in 2007-08 (=100%increase)	% Increase from Base-line in 2007-08
No. of Publications	3800	6670	7803	8407	6328	3383	67	166
No. of Other Academic Products	404	454	520	837	1144	802	183	283
No. of Patents Obtained	22	34	34	42	34	12	55	154
No. of Patents Applied for	12	23	58	95	86	93	617	716
R & D Products Commercialized	29	39	45	75	65	37	124	224

Table 2.5: Networking Outputs

Indicator (No. of Activities)	2003-04	2004-05	2005-06	2006-07	2007-08	Apr 2008 - Sep 08	% Increase in 2007-08 over 2003-04
Externally Funded Joint R & D projects	70	105	161	199	236	151	337
Joint Consultancies	183	237	312	290	186	131	143
Joint Publications	284	545	894	911	1106	677	389
Joint Training and Continuing Education Programs	55	94	274	375	434	220	789
Joint Research Guidance for M.Tech./Ph.D.	98	128	238	340	454	455	463
Joint Seminars, Conferences and Student Centered Activities	80	169	422	501	706	479	882

Project Outputs by Components

Component 1: Institutional Development: Institutional development was achieved through reform based investments. Overall the Project was substantially successful in promoting academic excellence through autonomy, accountability and quality assurance, upgrading faculty skills, internal efficiency of institutions, and increasing the production of post-graduates, and R & D required by industry. Almost all the investments envisaged were completed fully. In reforms, except for full academic autonomy and institution of block-grants, all other reforms achieved between 80-90% or more of their targets.

Sub-Component 1.1. Promotion of Academic Excellence

Accreditation: Over 90% of UG and PG programs that were eligible received or applied for accreditation during Project life. Accreditation to engineering programs in India are provided by the NBA which conducts periodical evaluations of programs according to specified norms and standards for academic quality set by the AICTE. NBA has full authority to recognize or de-recognize programs. Institutions fast-tracked their process of applying for accreditation under the Project – the share of programs for which accreditation was applied for increased substantially.

Table 2.6: Accreditation Status of Programs in TEQIP-supported Institutions

Program		All	States	CFIs
UG	Total Eligible	811	690	121
	Accreditation Received	511	441	70
	Applied	245	207	38
	Applied(Renewal)	1	6	0
	Remaining	55	42	13
	Accreditation Received + Applied (%)	**93.2**	**93.9**	**89**

PG	Total Eligible	566	432	134
	Accreditation Received	264	200	64
	Applied	232	174	58
	Remaining	70	58	12
	Accreditation Received + Applied (%)	**87.6**	**86.6**	**91**
Total	Total Eligible	1377	1122	255
	Accreditation Received	775	641	134
	Applied	477	381	96
	Applied(Renewal)	225	170	55
	Remaining	125	100	25
% Total	Accredited Received %	56.3	64	52.5
	Applied%	34.6	30	37.6
	Total %	**91.1**	**94**	**91.2**
	Remaining%	9.1	6	9.8

Autonomy and Governance: Under the Project, it was made mandatory for project institutions to be granted academic, financial, managerial and administrative autonomy. Universities, Deemed Universities and their constituent colleges, and affiliated but autonomous institutions are academically 'autonomous' in India and recognized as such by the University Grant Commission (UGC). Academic autonomy means that an institution can set its own curricula and do its own student assessment. Unless they are affiliated institutions, they can also give their own degrees. This range is spanned by substantial to full academic autonomy status of institutions under the Project. Financial autonomy to be granted to the project institutions comprised an inter-related and complementary set of activities such as recurrent expenditure being given to government institutions as block grants, the establishment of four funds, delegation of financial powers to heads of institutions and increased generation of revenues that were to be retained by institutions for discretionary use. More than three-quarters of the Project institutions became fully financially, managerially and administratively autonomous. The share was lower for academic autonomy because many institutions were affiliated to universities and had to follow their guidelines. Almost all institutions established a Board of Governors (BOG) whose frequency of meetings increased over the course of the Project.

Table 2.7: Status of Autonomy and BOG in the Project

Type of Autonomy	**Share of Institutions (out of 127)**
Full Academic Autonomy	60%
Full Financial Autonomy	84%
Full Managerial Autonomy	80%
Full Administrative Autonomy	88%
BOG	96%

Institutional Reforms: The table below shows achievements in reforms at the institution level. Except for credit exemptions, credit accumulation and credit transfers and block grants, achievements in all other reforms were over 90%. Credit exemptions, accumulation and transfers require agreements across institutions, both in the Project and outside it. Experience elsewhere in the world shows that these reforms take a long period of trial and error before they stabilize.

Table 2.8: Status of Institutional Reforms in Project Institutions

Reform Indicator	**Share of Institutions (%)**
Flexibility in Academic Progress :	
Multi-level and Multi-background Entry	93
Credit Exemptions	52
Credit Accumulation	40
Credit Transfers	50

Wide choice of Electives	91
Student Performance Evaluation	99
Faculty Incentives	98
Recognizing Meritorious Teachers	92
Attracting and Retaining Faculty	83
Graduates Records & Tracer Studies	84
Friendly Management System	98
Utilization of Resources and Reducing Wastage	97
Mechanisms for Regular Quality and Efficiency Audit	97
Block Grant	69

Improvements in Curricular Practices: More than 90% of the eligible programs underwent revision/restructuring/reorientation. More than two-thirds of the new programs were introduced. The shortfalls in the latter were likely due to lack of demand for them, and the difficulties of appointing new faculty.

Table 2.9: Status of Improvements in Curricular Practices

		Revision/Restructuring/ Reorientation of Programs	**Introduction of New Programs**
		% of target achieved (100% was target)	**% of target achieved**
UG	States	91	72
	CFIs	100	68
	All	93	71
PG	States	91	62
	CFIs	100	75
	All	93	66

Faculty and Staff Development: TEQIP institutions have a better record of filling faculty vacancies (76%) compared to India as a whole (<75%). Hiring additional faculty and staff remain a difficulty in the public sector, particularly the CFIs. State level institutions are able to hire new faculty and staff more easily; the more than 100% achievements at the state level is mostly due to new faculty and staff hired by private institutions.

Table 2.10: Filling in Faculty Positions

	Faculty Position	Number of Sanctioned Posts	% Filled (Regular +Contract)
CFIs	Director	18	100
	Professor	428	77
	Associate Professor	0	0
	Assistant Professor	673	67
	Lecturer	1506	76
	All	2625	74
States	Director	107	95
	Professor	1893	86
	Associate Professor	688	84
	Assistant Professor	3985	81
	Lecturer	7419	98
	All	16717	77
Total	Total	19342	76

Table 2.11: Hiring of Additional Faculty and Staff

		Posts Proposed in CIP	Posts Sanctioned	% Filled	% Filled Regular
CFIs	Faculty	158	57	31	23
	Staff	198	40	58	58
States	Faculty	405	299	150	118
	Staff	598	276	177	118

Table 2.12: Faculty and Staff Development (*available information)*

Date	Number of Faculty Trained	Number of Staff Trained
April 2006 - September 2006	5968	2529
September 2006 - April 2007	9346	3356
April 2007 - September 2007	5216	2391
September 2007 - April 2008	7883	4054
April 2008 - September 2009	4745	1378
Total*	**33158**	**13708**

*This is an under-estimate because it does not include Information on the first 3 years of the Project

Enhancement in Postgraduate Education and Research, and Consultancy Activities: The small numbers of post-graduate students in the engineering education sector in India has been a long term concern. In 2007-08, the annual numbers of enrolled Masters and Ph. D. students had increased by 50% and 69% over the base-line. In 2005-06, India overall graduated about 1000 Ph.D. students from 1400+ institutions. The achievements of the 127 project institutions in this regard (587 Ph.D. students graduating in 2007-08) is a significant break from the trend.

Table 2.13: Scaling up of PG Programs

PDO	**2003-04**	**2004-05**	**2005-06**	**2006-07**	**2007-08**	**Total**	**% Increase in Enrollment in 2007-08 over Base-line**
No. of Students Enrolled – Masters	8942	9781	10846	11196	13389	54154	50
No. of Students Graduating - Masters	7218	8318	8860	8705	10571	43672	46
No. of Students Enrolled - Ph.D.	1212	1297	1593	1761	2043	7906	69
No. of Students Graduating - Ph.D.	342	485	506	485	587	2405	71

Enhanced Interaction with Industry: There is no clear evidential basis for assessing achievements in this activity as no PDO or intermediate outcome indicator was formulated to measure it. Discussions during review missions suggest that interaction with industry was sought and increased for improving curricular practices, for promoting consultancy activities and in generation of internal revenues.

Increased Attention to Equity Issues: Equity assurance under the Project was outlined in the Tribal Development Plan and included institution determined activities for weak students belonging to

disadvantaged backgrounds including Scheduled Caste (SC)/Scheduled Tribes (ST)/Other Backward Castes (OBC) groups and girls. Activities included remedial teaching classes, establishment of book banks, preparation for job interviews and entrance exams, skills development and counseling.

Table 2.14: Tribal Development Plan Outputs
(Based on details of selected activities)

Indicators	**Services to Community & Economy**	**Tribal Development Program**	**Progress In Networking**
No. of Activities	4292	1794	2482
No. of Male Participants	438309	162312	na
No. of Female Participants	209795	62714	na
No. of SC/ST Participants	80935	na	na
No. of Other Participants	70726	na	na
No. of Faculty Participants	na	na	51247
No. of Student Participants	na	na	132726
No. of Staff Participants	na	na	8239

na : Data not available

Sub-Component 1.2 Networking of Institutions: At the time of Project start, institutional networking was low and not considered a mainstream activity by them. This changed substantially during the Project – with each institution undertaking an average of 6-7 such activities and benefiting nearly 2000 faculty and students per year.

Table 2.15 Networking Activities

	Total Number of Activities	Activities per Institution (per year)	Total Number of Beneficiaries	Beneficiaries per Institution (per year)
CFIs	650	36 (6)	37697	2094 (349)
States	4355	40 (7)	213394	1958 (326)
All	5005	39 (7)	251091	1977 (328)

Sub- Component 1.3 Services to Community and Economy: The opportunities for using real-life problems faced by the local society and community as a pedagogical tool by remains under-exploited by higher education institutions in India. Under the Project, on the average each institution organized 35 such activities annually benefiting a large number of beneficiaries over the life of the Project.

Table 2.16 Services to Community and Economy Activities

	Total Number of Activities	**Activities per Institution (per year)**	**Total Number of Beneficiaries**	**Beneficiaries per Institution (per year)**
CFIs	744	41 (7)	77747	4319 (720)
States	3691	34 (6)	516054	4734 (789)
All	4435	35 (6)	593801	4675(779)

Table 2.17 Details of Services to Community and Economy over time

Services to Community and Economy		Achievement During the Academic Year						
		2003-04	2004-05	2005-06	2006-07	2007-08	Apr. 2008 to Sept. 2008	Total
Involvement of institutions with the community	Faculty- community interactions in person-hours	10873	27501	229132	146030	196326	50758	660620
	Staff- community interactions in person-hours	9392	31607	127543	204577	226757	109011	708887
	Student- community interactions in person-hours	33927	53846	128290	150253	153587	159199	679102
	Visit of community members to the institution in person-hours	130554	177602	269876	413102	528465	200551	1720150

Component 2: Achievements in System Management Capacity Improvement: System management capacity improvement hinged on setting up of Project implementation units at the state and the central levels. Accordingly, 13 State Project Implementation Units and 1 National Project Implementation Unit was established. The Project also envisaged the introduction of modern management practices in institutions. More than 13,500 administrators and senior faculty members attended workshops and trainings in planning and management.

Table 2.18: Training in Modern Management

Indicators	2003-04	2004-05	2005-06	2006-07	2007-08	Apr – Sep 2008	Total	% Increase in 2007-08 over the base-line
No. of trainings organized	40	114	292	340	179	244	1209	610
No. of persons trained in planning and management	209	666	2124	4946	2262	3324	13531	1082

States/CFIs wise Achievements of Institutional Reforms and Selected Activities

(AP – Andhra Pradesh; GUJ – Gujarat; HAR – Haryana; HP – Himachal Pradesh; JR – Jharkhand; KA – Karnataka; KER – Kerala; MP – Madhya Pradesh; MH – Maharashtra; TN – Tamil Nadu; UT – Uttarakhand; UP – Uttar Pradesh; WB – West Bengal; CFI – Centrally Financed Institutions.

Tables 2.19 to 2.24 provide achievements by states and CFIs in various reforms and institutional development activities. The data in these tables come from the 10th Joint Review Mission Report and data collected from the institutions as part of the ICR exercise. Overall, the states performed better compared to CFIs in instituting reforms. Among the states, Andhra Pradesh, Maharashtra, Gujarat, Haryana, Tamil Nadu, West Bengal and Karnataka are the best performing states.

Table 2.19: Status of Autonomy (% of Institutions)

Type of Autonomy/State	AP (12)*	GUJ (6)	HAR (5)	HP (3)	JR (4)
Full Academic	75	17	100	0	33
Full Financial Autonomy	100	17	100	0	100
Full Managerial Autonomy	100	17	100	0	25
Full Administrative Autonomy	100	17	100	0	100
Type of Autonomy/State	**KA (14)**	**KER (5)**	**MP (7)**	**MH (17)**	**TN (11)**
Full + Substantial Academic Autonomy	86	0	14	71	73

Full Financial Autonomy	80	80	70	71	100
Full Managerial Autonomy	50	80	100	71	100
Full Administrative Autonomy	100	80	100	71	100
Type of Autonomy/State	**UT (4)**	**UP (10)**	**WB (11)**	**CFI (18)**	
Full + Substantial Academic Autonomy	25	30	27	100	
Full Financial Autonomy	75	100	100	100	
Full Managerial Autonomy	75	100	100	100	
Full Administrative Autonomy	75	100	100	100	

*Numbers in parentheses denotes number of project institutions in the state

Table 2.20: State-wise Achievements (% of Institutions) in Promotion of Academic Excellence (Part 1)

Indicator/State	**AP (12)**	**GUJ (6)**	**HA (5)**	**HP (3)**	**JR (4)**	**KA (14)**
Accreditation Achieved	94	57	52	100	63	54
Revised/Restructured Courses	100	67	82	100	100	100
New Courses Started	93	100	100	100	75	57
Block Grants	75	100	100	100	0	50
Four Funds	100	0	100	100	100	100
Faculty Vacancy	12	26	23	29	49	0
Faculty Training Targets						
Areas	91	23	89	100	73	57
Deputed	82	55	84	100	75	82

Table 2.21: State-wise Achievements (% of Institutions) in Promotion of Academic Excellence (Part 2)

Indicator/State	**KER (5)**	**MP (7)**	**MH (17)**	**TN (11)**	**UP (10)**	**UT (4)**	**WB (11)**	**Total (109)**
Accreditation Achieved	100	58	60	37	61	80	47	56
Revised/Restructured Courses	100	69	77	100	97	100	100	93
New Courses Started	50	29	45	67	48	100	79	66
Block Grants	20	100	35	100	70	75	64	57
Four Funds	100	100	100	100	100	100	100	81
Faculty Vacancy	2	23	7	19	1	20	13	12
Faculty Training Targets								
Areas	74	53	50	53	61	63	71	73
Deputed	93	66	59	80	57	64	79	75

Table 2.22: State-wise Achievements (% of Institutions) in Institutional Reforms (Part 1)

States (Number of Institutions)	**AP (12)**	**GUJ (6)**	**HAR (5)**	**HP (3)**	**JR (4)**	**KA (14)**	**KER (5)**
Flexibility in Academic Progress:							
Multi-level and Multi-background Entry	100	100	100	100	75	100	100
Credit Exemptions	50	100	80	0	0	100	20
Credit Accumulation	42	100	0	0	25	100	20
Credit Transfers	83	67	80	0	50	100	20
Wide choice of Electives	83	100	100	100	50	100	100
Student Performance Evaluation	100	100	100	100	100	100	100
Faculty Incentives	100	100	100	100	100	100	100
Recognizing Meritorious Teachers	100	67	100	100	75	100	60
Attracting and Retaining Faculty	100	67	100	100	75	100	40
Graduates Records & Tracer Studies	92	100	100	33	100	100	100
Friendly Management System	100	100	100	100	75	100	100

Utilization of Resources & Reducing Wastage	100	100	100	100	100	100	100
Mechanisms for Regular Quality & Efficiency Audit	100	100	100	100	100	100	100

Table 2.23: State-wise Achievements (% of Institutions) in Institutional Reforms (Part 2)

States (Number of Institutions)	MP (7)	MH (17)	TN (11)	UP (10)	UT (4)	WB (11)	CFIs (18)	Total (127)
Flexibility in Academic Progress:								
Multi-level and Multi-background Entry	100	100	100	90	100	100	61	93
Credit Exemptions	43	35	54	20	25	100	33	52
Credit Accumulation	29	29	36	10	25	100		40
Credit Transfers	43	24	36	10	25	100	22	50
Wide choice of Electives	71	100	82	70	75	100	100	91
Student Performance Evaluation	100	100	100	100	100	100	94	99
Faculty Incentives	100	100	100	90	100	100	89	98
Recognizing Meritorious Teachers	100	100	100	90	100	100	78	92
Attracting and Retaining Faculty	29	100	100	80	25	100	72	83
Graduates Records & Tracer Studies	86	100	100	80	100	100	17	84
Friendly Management System	100	100	100	100	100	100	89	98
Utilization of Resources and Reducing Wastage	100	100	100	90	100	100	83	97
Mechanisms for Regular Quality and Efficiency Audit	100	100	100	90	100	100	83	97

Table 2.24: State/CFI-wise Block Grants

State	Number of Institutions	Number with Partial/Full Block-Grants	%
Andhra Pradesh	12	5	42
Gujarat	6	5	83
Haryana	5	5	100
Himachal Pradesh	3	2	67
Jharkhand	4	3	75
Karnataka	14	8	57
Kerala	5	2	40
Madhya Pradesh	7	7	100
Maharashtra	17	7	41
Tamil Nadu	11	6	55
Uttar Pradesh	10	5	50
Uttaranchal	4	0	0
West Bengal	11	7	64
CFI	18	7	39
All	127	69	59

Annex 3. Economic and Financial Analysis

The Project improved overall internal and external efficiency of the 18 Centrally Funded Institutions and 109 participating institutions in 13 states.

Internal Efficiency
The utilization of resources improved as the numbers of students enrolling in project institutions increased substantially over the course of the Project. Faculty productivity improved reflected in the increase in the number of publications and patents per faculty member. There was also improvement – albeit to a lesser extent – in the utilization efficiency of resources due to sharing of physical and human capital resources across networked institutions. The Project also improved organizational and administrative efficiency of project institutions, further improving the productivity of resources.

The table below shows how internal efficiency has improved over the Project period for the participating institutions. There is modest to substantial improvement in all internal efficiency indicators. Many of these indicators are related to the autonomy status of institutions.

Table 3.1: Internal Efficiency Indicators

Internal Efficiency Indicators	2003-04	2007-08	% improvement over base-line	% of target
Academic calendar under institution's control (No. of institutions saying 'yes')	66	80	21	63
Admission process under institution's control (No. of Institutions saying 'yes')	27	71	238	56
Number of Days taken to complete admission	41	33	20	-
Conduct of examinations under institution's control (No. of institutions saying 'yes')	51	79	55	62
Number of days taken to complete semester/annual examination	28	22	21	-
Declaration of results under institution's control (No. of institutions saying 'yes')	46	68	48	54

Source: NPIU data

External Efficiency
There was a substantial improvement in the employment rates of both undergraduate and post-graduate students and their average starting salaries through the life of the Project. From the data available, campus employment rate is used as a proxy for overall employment rate as it is the most reliable component of employment rate information, even though it will underestimate the true employment rate. Over the Project period employment rate for UGs increased from 41% to 75%, and for PGs more than doubled from 25% to 56%. Similarly, annual salaries increased by 75% and 90% for UG and PG students respectively.

Benefit-Cost Analysis
An internal rate of return (IRR) analysis was done during Project appraisal under different (low, base-case and high) scenarios of internal and external efficiency. IRR estimates from the analysis ranged from a low of 3% to a high of 23%.

The benefit-cost analysis and estimate the IRR were redone based on data that is now available from project institutions. Given the great difficulty of putting together counter-factual information (i.e. labor market outcomes for project institutions in the absence of the Project), the assumptions made under the 'high' external efficiency scenario from the Project Appraisal Document (PAD) were employed to describe the state of the world in the no-project case. All the assumptions used in the analysis are listed below:

Assumptions for the IRR analysis:
- The employment rate increases by 1.5 percentage points every year in the no-project case.
- Wages increase annually by Rupees 3600 in the no-project case.

- The working life-time is counted from the time the student graduates to the time of retirement, i.e. from age 25 years to age 60 years.
- The discount rate is assumed to be 5% which is the average interest rate over the Project life-time. To ensure that our analysis is robust, we also estimate the IRR using a discount rate of 10%.
- Number of beneficiaries: the following shares of students by year were assumed to have benefited from the Project starting in 2003 when the Project became effective.

Table 3.2: Share of students batch-wise benefiting from the project

Year	4 Year Graduate Program (%)	2 Year Post-graduate Program (%)
2003	0%	0%
2004	25%	50%
2005	50%	100%
2006	75%	100%
2007	100%	100%
2008	100%	100%

- Costs of the Project are assumed to be only project costs. Zero opportunity costs are assumed because the students would have attended the college/university anyway even without the Project.
- Benefits of the Project are the higher employment rate and higher annual salaries of the student beneficiaries.

In the IRR analysis re-done with actual retrospective data, the internal rate of return is found to be 15% when the discount rate is 5% and 9% when the discount rate is 10%. Compared to the rate of return on bank deposits and physical assets in the general economy which was 11-12%, the investment in technical education/engineering was productive with the lower discount rate and competitive with the higher one. Moreover, the IRR calculated thus is an under-estimate as it takes into account only the labor market outcomes of students who passed through the project institutions during the Project period. It does not take into account (a) future students who are also likely to benefit at least in the medium term, (b) the contribution to the competitiveness and productivity of the economy through improved skills of the engineering labor force and better R & D, (c) impact on the local community and economy.

Financial Sustainability

The Project's financial sustainability will depend on willingness on the part of states and institutions to support activities introduced during the Project. Institutions that have established the four funds can continue activities through their judicious management and use. IRG especially from non-tuition sources is another likely source of funds for continuous institutional development. While, it is likely that most Project reforms will be sustained, certain activities such as faculty development, services to community and economy, tribal development plan and networking will decline and eventually cease over time if not financially supported by project institutions.

Annex 4. Bank Lending and Implementation Support/Supervision Processes

(a) Task Team members

Names	Title	Unit	Responsibility/ Specialty
Lending			
Shashi K. Shrivastava	Task Team Leader	SASHD	
Sajitha Bashir	Senior Education Economist	SASHD	
Ralph W. Harbison (late)	Consultant – Policy Planning	SASHD	
C. S. Jha (late)	Consultant – Technical Education	SASHD	
S. A. A. Alvi	Consultant – Project Implementation	SASHD	
Vandana Sipahimalani Rao	Education Economist	SASHD	
Meera Chatterjee	Senior Social Development Specialist	SASDI	
S. Krishnan	Senior Procurement Engineer	SARPS	
Rajat Narula	Senior Financial Management Specialist	SARFM	
Erik W. Thulstrup	Consultant – Science and Technology Management	SASHD	
Sanjay Rastogi	Consultant - Financial Management	SARFM	
D. K. Srivastava	Consultant - Economist	SASHD	
M.H.Dhananjaya	Consultant – Institutional Management	SASHD	
Ravinder Kaur	Consultant – Social Development	SASDI	
Jamil Salmi	Manager (Education), HDNED – Peer Reviewer	HDNED	
Lauritz Holm-Neilsen	Lead Education Specialist - Peer Reviewer		
Amit Dar	Senior Economist - Peer Reviewer	SASHD	
Grant Sinclair	Lead Education Specialist - Advisor		
Sara Gonzalez Flavell	Senior Counsel	LEGMS	
Gertrude Cooper	Program Assistant	SASHD	
Renu Gupta	Program Assistant	SASHD	
Supervision/ICR			
Andreas Blom	Task Team Leader (since Feb 2008) and Senior Education Economist	SASHD	
Rajiv Aggarwal	Consultant	EASHD	
S. A. A. Alvi	Consultant	SASHD	
Kiran R. Baral	Sr Procurement Off.	SARPS	
Philip Beauregard	Sr Counsel	LEGES	
Asha Bhagat	E T Consultant	SARFM	
Hyacinth D. Brown	Senior Finance Officer	LOAFC	
Debabrata Chakraborti	Senior Procurement Specialist	SARPS	
Mam Chand	Consultant	SARPS	
Meera Chatterjee	Senior Social Development Specialist	SASDI	
Isak Froumin	Senior Education Specialist	ECSHD	
Sangeeta Goyal	Education Economist	SASHD	
Renu Gupta	Program Assistant	SASHD	
Nalin Jena	Senior Education Specialist	SASHD	

Chandra Shekhar Jha (late)	Consultant	SASHD	
A.K.Kalesh Kumar	Senior Procurement Specialist	SARPS	
Tanuj Mathur	Senior Financial Management Specialist	SARFM	
Hena G. Mukherjee	Consultant	ECSHD	
Michelle Riboud	Consultant	HDNED	
Hiroshi Saeki	Operations Analyst	SASHD	
Shashi K. Shrivastava	Task Team Leader (till Feb 2008) and Consultant	SASHD	
Elfreda Vincent	Program Assistant	SASHD	

(b) Staff Time and Cost

Stage of Project Cycle	Staff Time and Cost (Bank Budget Only)	
	No. of staff weeks	USD Thousands (including travel and consultant costs)
Lending		
FY01	19	67.29
FY02	35	116.98
FY03	14	57.58
FY04		0.00
FY05		0.00
FY06		0.00
FY07		0.00
FY08		0.00
Total:	68	241.85
Supervision/ICR		
FY01		0.00
FY02		0.00
FY03	7	30.68
FY04	18	92.88
FY05	16	99.45
FY06	21	126.66
FY07	15	116.57
FY08	38	241.38
FY09	46	188.78
FY10	3	3.25
Total:	164	899.65

Annex 5. Beneficiary Survey Results

Two types of beneficiary surveys were carried out under the Project. These were (a) student and faculty satisfaction surveys done every six months in all project institutions and (b) an implementation survey of SPFU members, and faculty in project institutions responsible for implementing the Project. The implementation survey was conducted by the task team in 2008.

Satisfaction Surveys

Satisfaction surveys of students and faculty belonging to project institutions – were carried out every six months during the Project totaling to 7 complete usable surveys by the time of Project close. The surveys were conducted by auditors through questionnaire based interviews of randomly selected samples of students in all project institutions. Responses were aggregated to create indices for overall satisfaction and for satisfaction with different aspects of TEQIP.

Table 5.1 shows the national average for the student satisfaction scores (on a 10-point scale) across the last 5 rounds by Project implementation element and for the overall Project.

Table 5.1: Satisfaction Scores by Project Element and Round

Project Element	Round				
	3	4	5	6	7
Project Implementation	5	5.6	6.2	6.7	6.9
Implementation of Institutional Reforms	5.5	6.3	6.9	7.3	7.7
Administrative and Managerial Efficiency Improvement	5.6	6.3	7.1	7.7	7.9
Quality of Education, Training and Services	5.3	5.9	6.5	7	7.3
Overall Performance	5.3	6	6.6	7	7.4

Table 5.2 below shows the overall student satisfaction scores by states and CFIs for the same five rounds. For each state/CFI there is a positive trend in the satisfaction scores. In round 3, the mean was 6.67 and standard deviation 0.80; in round 7 which is the last round, the mean had increased to 8.5 and the standard deviation had declined to 0.5 – students' satisfaction was higher on the average towards the end of the Project and more tightly distributed around this high average. Statistical testing of means differences between the base-line and Project close outcome data show that there is a strong likelihood that the Project influenced the outcomes positively.

Table 5.2: Calculated Student Satisfaction Scores by States and Rounds

State	Round 3	Round 4	Round 5	Round 6	Round 7
Andhra Pradesh	8.2	8.5	8.9	9.0	9.1
Gujarat	5.9	5.8	7.8	9.0	9.2
Haryana	7.1	7.3	8.0	8.3	8.3
Himachal Pradesh	5.6	6.1	7.3	8.1	8.2
Jharkhand	5.6	6.7	7.6	7.8	8.2
Karnataka	6.6	7.4	8.0	8.4	8.8
Kerala	5.8	6.3	6.4	7.1	7.8
Madhya Pradesh	6.3	6.7	6.9	7.2	7.6
Maharashtra	7.5	8.3	8.7	9.0	9.1
Tamil Nadu	6.7	7.4	8.0	8.2	8.4
Uttar Pradesh	7.1	7.8	7.8	8.3	8.4
Uttaranchal	6.3	8.1	7.9	8.4	8.5
West Bengal	7.6	8.3	8.4	8.7	8.9
CFI	7.2	7.7	8.3	8.7	9.1

Implementation Survey

An implementation survey was undertaken by the World Bank in 2008 to gain an understanding of the design, implementation and impact from the point of view of its key implementers. A web-based questionnaire was sent to the key officers of the SPFUs and the project institutions implementing the Project on their satisfaction with and views on the overall Project and its components, and implementation support they received from the central and state governments, and the World Bank. 170+ entries were received from a total of 350 respondents to whom the questionnaire was sent (response rate: approximately 50%). Anonymity of respondents was strictly maintained in the survey

The main results of the implementation survey are provided in Table 5.3 below. A majority of the respondents expressed a high level of satisfaction with the overall Project, its design and implementation. There was also an overall high level of satisfaction among the respondents with the support provided by NPIU/MHRD, SPFUs and the World Bank. The respondents identified (a) teacher-training infrastructure, equipment, the concept of holistic development and improvement in the quality of education as the best features of the Project and (b) excessive paper-work, lack of government policy for autonomy, lack of rewards for good performance, and lack of focus on real constraints on quality as the Project's weakest features. For implementation, the feedback providers certain areas for improvement with respect to Project design and implementation.

Table 5.3: Results of Feedback Survey

Question	
Overall impact (Please rate how much you agree with the following statements, 1 meaning you strongly disagree, 10 meaning you strongly agree).	**Average Rating on a scale from one to ten**
I feel proud to be associated with the TEQIP Project	9.58
I feel satisfied with the overall impact of the Project	8.55
I feel satisfied with the overall design of the Project	8.34
I feel satisfied with the overall implementation of the Project	8.11
Please rate your views on the following statements (1 being strongly disagree, 10 strongly agree)	
The Project design rightly focused on promotion of academic excellence	8.75
The Project rightly allowed freedom to institutions to choose their own path for achieving academic excellence	8.38
Competitive selection of Institutions has been a very welcome feature of the Project.	8.83
Implementation of competitive funding process was cost- and time efficient	8.32
Services to the Community has been useful to students in identifying real life problems	7.31
Networking has increased professional outputs (publications, products, designs, patents, etc) from participating institutions	7.14
Policy Reforms Please rate your impression of the policy reforms (1 strongly disagree, 10 strongly agree)	
The intended government policy reforms (autonomy and block grants) have been achieved	6.94
Institutions are able to exercise with confidence whatever autonomies that were granted to them	8.04
The BOGs are functioning and are able to guide institutional development and Project implementation	7.97
Institutional Reforms Please rate your impression of the institutional reforms introduced under the Project (1 strongly disagree, 10 strongly agree)	
The intended institutional reforms have been achieved.	8.09
The reforms were clearly and timely understood by the Head of Institution and Heads of Departments.	8.04

All the faculty members were aware of the desired reforms	7.84
Reforms with financial implications were difficult to implement.	6.07
Student appraisal of teachers' performance was useful in improving teaching-training performance of teachers.	8.36
Incentives to teachers and recognition of their merit have been implemented.	6.55
The 4 funds established during Project-life will be useful in the future.	8.28
Implementation of Soft components (Faculty Development, Networking, Service to economy and Tribal Development) Please rate how much you agree with the following statements (1 strongly disagree, 10 strongly agree)	
The soft components received high attention from the on-set of the Project	7.64
Faculty development was undertaken based on institutional needs	8.11
Faculty Development is well organized in the institutions	7.85
Networking is a low priority for achievement of institutional excellence	4.85
Service to Community and Economy is central to my institution's mission	7.26
Support to weak students (Tribal Development) is central to my institution's mission	8.22
The goals of Service to Community and Economy and Tribal Development were clearly and timely understood by the institutions	7.24
Joint Review Missions (JRMs) Please rate your impression of the JRMs (1 strongly disagree, 10 strongly agree)	
Motivated States and institutions to implement the Project.	8.74
Improved understanding of the objective and spirit of TEQIP.	8.84
Identified shortcomings in implementation and in the development of plans for better performance.	8.63
Provided useful advice for improving quality of education and training.	8.72
Provided an opportunity for sharing of experiences and learning best practices.	8.96
Provided guidance on procedures and rules for implementation.	8.79
Project monitoring and reporting Please rate how much you agree with the following statements (1 meaning you strongly disagree, 10 meaning you strongly agree).	
I am satisfied by the quality and quantity of information on Project performance that I receive	8.25
Information and data called for by the World Bank/ NPIU/SPFU was excessive	7.52
NPIU's Review Reports for the JRMs gave a holistic picture of the performance of each institution/state	8.57
Stakeholder responses contained in the Tally Sheets are useful	8.12
The performance audits are useful and motivating	8.72
A web-based MIS would have been an efficient method for data and information reporting.	9.04
Financial Management and Procurement (fiduciary procedures) Please rate how much you agree with the following statements (1 meaning you strongly disagree, 10 meaning you strongly agree).	
I have adequate knowledge of World Bank procedures for procurement to perform my job.	8.62
Training in the World Bank procedures for procurement was adequate.	8.23
The procurement procedures achieved economy, efficiency, transparency and fairness.	8.70
I have adequate knowledge of World Bank procedures and requirements for financial management to perform my job.	8.69
Training in the World Bank's requirement for financial management was adequate.	8.20
The World Bank procedures are cumbersome.	5.20
Implementation and monitoring of the fiduciary responsibility was adequate.	8.22
Please rate how much you agree with the following statements (1 meaning you strongly disagree, 10 meaning you strongly agree)	
The Project increased production of high quality graduates	8.10

The Project increased demand from industry for high quality professionals		7.75
The Project increased cooperation and resource sharing between institutions		7.85
The Project increased involvement of institutions with communities		8.01
The Project improved internal efficiency of project institutions		8.55
The Project improved efficiency of the State's engineering education system		8.18
Please select the Project's best and second best features by scoring on two of the following statements:	Best Feature	Second Best Feature
Implementation of policy reforms (autonomies and block grant)	10.6%	2.8%
Support based upon the merit of each institution's proposal	4.3%	3.5%
Improvement in teaching-training infrastructure	22.7%	19.1%
Provision of equipment to help improve quality research	15.6%	15.6%
Improvement in quality of education in institutions	20.6%	22.7%
Changed of mindset of faculty	9.2%	10.6%
Reforms led to holistic development of institutions	13.5%	12.8%
Constant monitoring of implementation and performance	2.8%	12.1%
There was no impact	0.7%	0.7%
Please select the greatest and the second greatest weakness of the Project by scoring on two of the following statements:	Greatest Weakness	Second Greatest Weakness
Lack of coordination between participating agencies	7.1%	6.4%
Absence of Government policy support for autonomy	15.6%	4.3%
Absence of Government policy support for institutional reforms	5.7%	7.8%
Inadequate guidance on Project concepts	5.0%	5.0%
Absence of reward for good performance	17.7%	25.5%
No focus on the real constraints for quality	10.6%	10.6%
Too much paperwork	29.1%	19.1%
Too little capacity building	1.4%	7.8%
No weaknesses	7.8%	13.5%
Performance of the World Bank Please rate the work of the World Bank in TEQIP (1 being very poor, 10 being very good).		
I feel satisfied with the performance of the World Bank		8.89
Collaboration with national and state governments		8.25
Provision of technical assistance as and when required		8.20
Provision of timely and adequate information		8.37
Responsiveness to inquiries		8.39
Support with Procurement in terms of procedures and guidelines		8.59
Support with Financial management in terms of procedures, rules and budgeting		8.51
Performance of NPIU/MHRD Please rate the work of the NPIU/MHRD in TEQIP (1 being very poor, 10 being very good).		
Overall, I feel satisfied with the performance of NPIU/MHRD		8.48
Collaboration with state governments and institutions		8.35
Timeliness and adequacy of help and guidance		8.27
Responsiveness to inquiries		8.38
Support with procurement in terms of procedures and guidelines		8.54
Support with financial management in terms of procedures, rules and budgeting		8.40
Performance of State Governments SPFUs Please rate the contribution of your State government in TEQIP (1 being very poor, 10 being very good).		
Overall, I feel satisfied with the performance on the SPFU that I work with		8.23
Timely provision of funds for institutional Project implementation		8.36
Providing periodic guidance on Project concepts and Bank procedures		8.01

Responsiveness to inquiries	8.15
Facilitating training of faculty and staff	7.65
Motivating institutions to enhance their achievements under the Project	8.19
Promoting effective networking among institutions	7.40
Support with financial management in terms of procedures, rules and budgeting	8.12
Support with procurement in terms of procedures and guidelines	8.08
Performance of Mentors and Auditors Please rate your satisfaction with Mentoring and Performance Auditing (1 being strongly disagree, 10 strongly agree).	
Overall, I feel satisfied with the contribution of Mentors to TEQIP	8.09
Mentors helped in better understanding of Project concepts	7.94
Mentors helped in improved planning of faculty development activities	7.76
Mentors helped in achieving excellence in teaching and training	7.75
Results and suggestions from performance auditors helped in improving institutional Project implementation	8.56

Annex 6. Stakeholder Workshop Report and Results

The 10th and last JRM for the Project in January 2009 was combined with an ICR mission. Detailed preliminary findings for the ICR were presented to and discussed with the JRM participants. This was a good opportunity to revisit Project design and implementation from the perspective of the experience of the actual implementers, and their views inform the messages presented in this ICR.

Annex 7. Summary of Borrower's ICR and/or Comments on Draft ICR

ASHOK THAKUR
ADDITIONAL SECRETARY & NPD
Phone : 23383202

D.O. No. F.No. 16-21/2009-TS-VII

सत्यमेव जयते

भारत सरकार
मानव संसाधन विकास मंत्रालय
उच्चतर शिक्षा विभाग
शास्त्री भवन
नई दिल्ली - 110 115
GOVERNMENT OF INDIA
MINISTRY OF HUMAN RESOURCE DEVELOPMENT
DEPARTMENT OF HIGHER EDUCATION
SHASTRI BHAVAN
NEW DELHI-110 115

September 18, 2009

Dear Mr Zagha,

Thank you for your letter dated September 8, 2009 enclosing a copy of the draft of Implementation Completion & Results Report for Technical Education Quality Improvement Programme prepared by a team led by Mr Andreas Blom, Task Team Leader.

We are pleased to note that the World Bank has rated the overall performance of the Project as "**Satisfactory**". The achievements in the areas of Percentage of high quality graduates/post graduates in relevant and cutting edge technologies, Improvement in employment rate and emoluments, professional outputs have exceeded the targets and we thank you for the complements given for the efforts made by GoI, States, NPIU and Institutions. We also appreciate the complements given for the efforts made in the areas of Procurement and Finance.

The Project, being unique in nature passed through different stages of difficulties in implementation. However, the end result has shown total alignment in the project objectives and achievements. In this context, the following suggestions are given:

i) In page 4, item 2.2, 2nd para, item number (b) regarding "leadership at the Central Govt. level" may be deleted.

ii) In page 4, item 2.2, para 3, the words "either implement the project as per agreements or withdraw" could be moderated to "strongly advised the States to fulfill the requirement".

iii) In page 5, under Monitoring and Evaluation (M&E) Design, Implementation and Utilization, the words "There was however scope for paying more attention to the quality of data collected, and to collect data on quality aspects of the Project" could be moderated as the achievements have been satisfactory as reflected in the Annexures.

iv) In page 6, the project's fiduciary compliance is rated as "Moderately Satisfactory". The utilization of funds has been 99.64%, which is highly satisfactory for an Education Project. It is therefore, suggested that the rating should be revised to "Satisfactory".

The TEQIP Project being implemented in the country with the World Bank assistance with bottom to top approach is the first of its kind and we acknowledge that there is a positive improvement in bringing about changes in the mindset and towards achieving excellence in Technical Education to meet the global challenges. The MHRD and Govt. of India are committed to continue the efforts and bring substantial improvements in the Technical Education system.

Contd....

सर्व शिक्षा अभियान
सब पढ़ें सब बढ़ें

We would like to place on record, the Government of India's deep sense of appreciation for the support provided to the project by the World Bank. We would also like to thank the team who prepared the draft Implementation Completion Report for highlighting the achievements under the project and for their excellent rating of the Project. In particular, the support and co-operation extended by Prof S K Shrivastava and his colleagues in the initial stages of the Project and subsequently by Mr Andreas Blom and his team, is gratefully acknowledged. Our grateful thanks are also due to with Late Prof C S Jha, whose contribution to the Project and education system in the country is highly commendable.

A copy of the Implementation Completion & Results Report (ICR) prepared by the MHRD/Govt. of India is enclosed.

With regards,

Yours sincerely,

(ASHOK THAKUR)

Encl : ICR

Mr. N Roberto Zagha
Country Director
The World Bank
70 Lodi Estate
New Delhi – 110 003

Borrower's ICR

I. Background

Technical Education Quality Improvement Programme of Government of India (TEQIP), aims to upscale and support ongoing efforts of GoI to improve quality of technical education and enhance existing capacities of the institutions to become dynamic, demand-driven, quality conscious, efficient and forward looking, responsive to rapid economic & technological developments occurring both at National & International levels. The programme was designed as a Centrally Coordinated, multi-state and long term of 10 to 12 years period.

II. Project Description

The first phase of TEQIP supported 127 Technical Education Institutions; consisting of 18 Centrally Funded Institutions (CFIs), and 68 State Government Funded Institutions, 22 Private Unaided Institutions and 19 Polytechnics from 13 States. List of Project Institutions is given in Annexure I.

- **The Project components:**

1) Institutional Development

   a) Promotion of Academic Excellence
   b) Networking of Institutions for Quality Enhancement and Resource Sharing
   c) Enhancing Quality and Reach of Services to Community & Economy

2) System Management Capacity Improvement

- **Unique Features of the Project**

  - Freedom to Institutions to develop their own Institutional Plan (the top down approach was rejected)
  - Freedom to Institutions to determine their own path for excellence

III. Project Objectives

- To create an environment in which Engineering Institutions selected under the Programme can achieve their own set targets for excellence and sustain the same with autonomy & accountability.
- To support development plans including synergistic Networking and Services to Community & Economy of competitively selected institutions for achieving higher standards.
- To improve efficiency and effectiveness of the technical education management system in the States and institutions selected under the Programme.

IV. Achievement of Project Objectives

The component wise achievements are described below:

A. Institutional Development

a) Promotion of Academic Excellence: The academic excellence in the project institutions was achieved as described below:

(i) **Accreditation:** During the Project period overall, 93% of eligible UG courses and 83% of eligible PG courses were either accredited or applied for. In the States of Andhra Pradesh, Himachal Pradesh, Karnataka, Kerala, Maharashtra and Tamilnadu the eligible courses were accredited in the range of 90 to 100%. In the same range, the PG eligible courses were

accredited in the States of Andhra Pradesh, Haryana, Kerala & Uttarakhand. It is note-worthy to mention that all the eligible UG and PG courses were accredited in the 10 CFIs.

(ii) **Faculty and Staff Positions*:*** During the Project period 88% of the sanctioned faculty positions and 78% of the staff positions were filled. 12% vacancy of faculty positions at the national level existed at the end of the Project. However, in many institutions, 30 % positions remained vacant against the sanctioned positions, due to varied reasons such as non-availability of qualified & experienced faculty and eligible faculty from the reserved categories. On account of introduction of new courses in the Project, additional 476 faculty and 548 staff positions were filled.

(iii) **Faculty and Staff Development:** Faculty and Staff Development (FSD) was stressed upon throughout the Project period. A study on, "Assessment of Faculty Development/Training under TEQIP and Approach to Scale-up for Future" was conducted for a sample of 35 institutes (Summary of the study report is given in Annexure II). The study revealed that the 75-100 % faculty undertook the training in pedagogy, subject competence, laboratory development, research competence, management skills, continuing education, qualification up-gradation, and in consultancy. Training Need Analysis (TNA) was required to be conducted by each institution regularly keeping in view the career objectives and institutional goals. There was plenty of scope to improve the method adopted for TNA. The faculty could not proceed for training due to academic commitments leading to gaps in achievements. Contract faculty in most cases was not sent for the training. Institutions reported that the faculty on an average got training for 8 days per person. Similarly, technical staff undertook short-term and long-term trainings during the Project with an average of 7 days per staff on industrial training and processes, laboratory and workshop instructions, maintenance of laboratory and workshop equipment, etc.

(iv) **Modernization of Teaching Learning Facilities:** The provision for Goods was made for modernization of laboratories/ computer centers, setting up of new laboratories improving teaching learning process etc. Computer Centers in all the 127 Institutions were modernized with state-of-the art facilities. Campus wide Networking was also developed in all the Project Institutions. The facilities like multimedia lab, e- library, e- journals; EDUSAT, etc. were added in all the Institutions. Eighty project institutions obtained membership of the Indian National Digital Library in Engineering Science & Technology (INDEST) Consortium. 38 new constructions like computer centers, libraries, media-centers, etc. were carried out and put to use. In addition, the refurbishment of 98 buildings; renovation of 153 laboratories and extensions to 51 buildings were also carried out.

(v) **Revision of Existing Courses:** With the implementation of academic autonomy, 91% of the 765 UG/Diploma and 556 PG/Post Diploma courses were revised by the State Project institutions and CFIs revised 100% of their courses.

(vi) **Starting of New Courses:** A total of 164 new courses consisting of 136 PG and 28 UG courses were proposed to be started. However, out of which only 89 PG (66%) and 20 UG (71%) courses were started during the Project period. Given the diminished and unforeseen decline in demand for PG courses from students for those proposed initially, starting of all new PG courses, did not make it economically viable and hence the shortfall of 55 courses remained. However, institutions offered other UG and PG courses on demand other than listed in the Project with their own funds.

(vii) **Evaluation and Placement of Students:** The students' performance was evaluated systematically through periodic tests, assignments, tutorials and holding technical competitions. This helped in improving the percentage of high quality graduates (those passing with 75% or above or equivalent overall GPA) increased from 35 % to 50% in UG and 36% to 51% in PG during the Project period. The employability of UG students increased from 41% at base year to 76% and for yability of PG students it increased from 25% at base year to 56% at the end of the Project. The average annual emolument of the UG students increased to Rs. 0.290 millions from Rs. 0.166 millions and in case of PG, it increased to Rs. 0.358 millions from Rs. 0.190 millions.

(viii) **Academic Output:** The most significant academic outputs of the Project were demonstrated through increased research publications, patents, research guidance and technology transfer.

The creditable achievement is in the area of publication of Research Papers from the Project institutions. The baseline figure for publications was 4951 in the year 2003-04. The target set for the achievements was 100% increase. Whereas the actual achievement was 700% i.e. 37,542 papers were published at the end of the Project. A total of 290 R&D products were commercialized, 180 patents were obtained and 376 applied for. The enrollment of students in PG courses was increased to 13,389 from 8,942 in the project institutions. Similarly, the Ph.D. students' enrollment was increased to 2,043 from 1,212 from base year 2003-04 and 587 Ph. Ds were awarded every year in the project institutions. This increase of PG and Ph.D. enrollment is expected to mitigate partially the shortage of faculty.

(ix) **Tribal Development Plan (TDP)**: All the 127 Institutes implemented a wide range of measures to assist socio-economically disadvantaged and academically weak students. Institutions developed a systematic approach of Diagnostic Test to assess the student's academic weakness and provided them with appropriate 'remedies'. A total of 1797 activities including remedial teaching, coaching for communication skills development, summer schools, grievance re-dressal, earn-while-learn scheme, etc. were undertaken.

b) Networking of Institutions for Quality Enhancement and Resource Sharing

Through Networking of Institutions 786 joint R & D projects, 1339 joint consultancies, 4417 joint publications, 1452 joint training and continuing education programmes, 1713 joint guidance for M. Tech. & Ph. D. and 2357 joint seminars and conferences were conducted. The details of activities carried out during the project period are graphically represented in the figure 4.1.

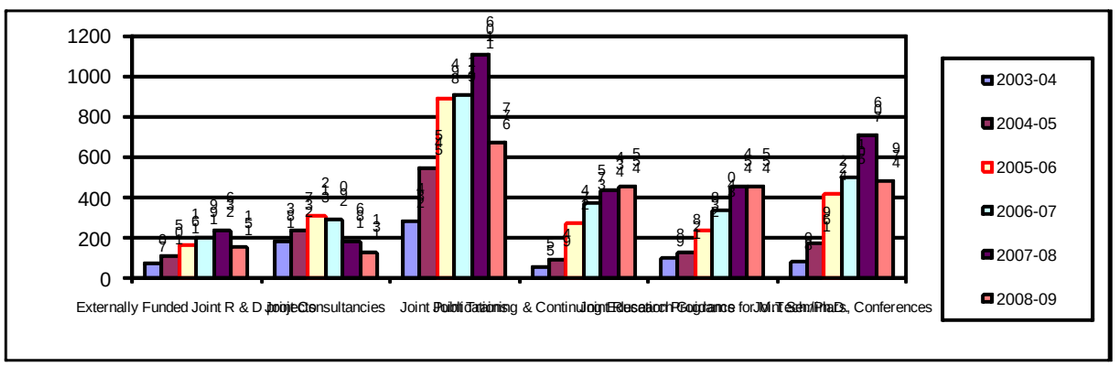


Figure 4.1: Year wise activities - Networking of Institutions for Quality Enhancement and Resource Sharing

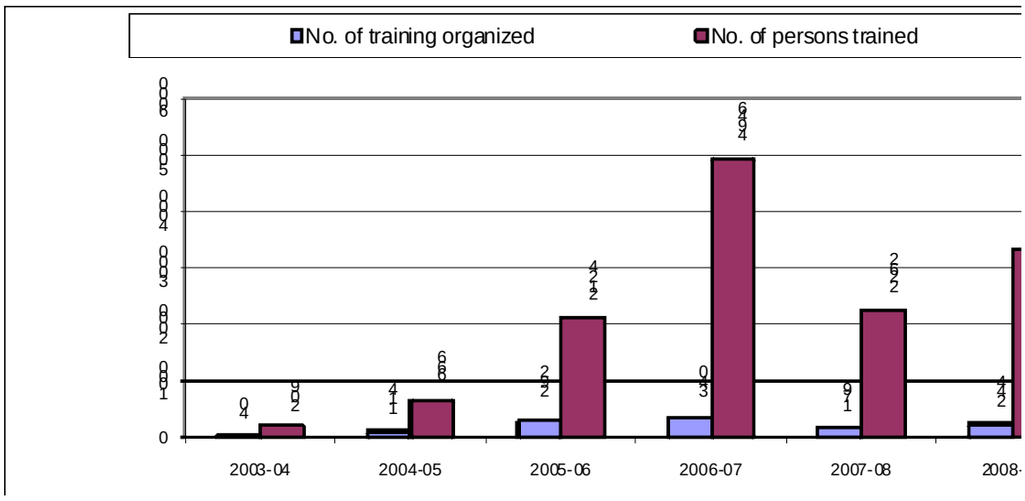
The concept of Lead and Networking was incorporated in the project design, where Lead Institution (40) would Network (68) with the other Institutions in its proximity so that the institutions could benefit mutually by sharing each other's resources. But the achievements under this sub-component were not up to the desired level. As networking partners were pre fixed, in many cases like NIT Jalandhar, NIT Jaipur, etc., which was Lead Institutions, could not network as no other project Institution was in their proximity as the States of Punjab and Rajasthan did not join the project.

c) Enhancing Quality and Reach of Services to Community & Economy

A total of 4,388 activities were conducted. Mini-projects like biogas plants, solar energy harvesting, rainwater conservation and its utilization for housework, recycling of waste paper, fertilizer from garbage, etc. were developed, which benefited a total of 5,16,300 community, in the vicinity of the institutions.

B. System Management Capacity Improvement

For the effective exercise of autonomy, each project institutions was to establish a Board of Governors (BoG) for guiding the institutions for the overall development. Consequently, 122 institutions had established BoG with participation of eminent Educationist & Industrialists including



stakeholders. During the project period BoG meetings in the range of 2-4 were held at the respective institution. 88% of the institutions were granted full managerial autonomy. 1,209 training programmes on planning and management were arranged benefiting 13,531 officials. The details of the System Management Capacity Improvement training programmes conducted by the institutions during the project is graphically represented in fig.4.2. Seventy-seven institutions under the project enhanced administrative and management capacities by fully computerizing their financial management system, students record and faculty records.

NPIU arranged training programme to increase the 'Management Capacity Development' of Institutions and SPFUs for 135 senior faculty and officials of SPFUs at MDI Gurgaon. In addition, NPIU organized two programmes at AIT, Bangkok on 'System Management & Capacity Improvement of Technical Education' in which 6 Directors of Technical Education, 16 NIT Directors/HoDs and 4 MHRD/NPIU officials participated. Similarly, 13 NIT Directors and 7 MHRD/NPIU officials visited Finland, Germany and USA through three Study & Networking Tours organized by NPIU.

V. Academic and Non-Academic Reforms

A series of Academic and Non-Academic Reforms were undertaken to improve the efficiency of the Institutions and make the academic process more flexible for the students. Following are the achievements:

- 68% (86) of the Institutions (18 CFIs + 68 State Institutions) achieved full academic autonomy and 32 substantial autonomy.
- 87% of the Institutions implemented full financial autonomy, 80% implemented full administrative autonomy and 88% implemented full managerial autonomy, while remaining institutions were granted substantial administrative, managerial and financial autonomies.
- 98% of the Institutions established all four funds (Corpus, Staff Development, Maintenance and Depreciation funds) for continuous improvement and sustaining gains after the closure of the project.
- Block grant scheme was introduced fully in 1 State (Haryana) and partially in 9 States.
- All the 18 CFIs complied with all the Legal Covenants and Institutional Reforms except the block grant funding.
- The number of days required to complete the admission process got reduced to 33 from 41.
- The number of days required to conduct the examination got reduced to 22 from 28.

The States of Andhra Pradesh, Haryana, Himachal Pradesh, Karnataka, Madhya Pradesh, Maharashtra, Uttar Pradesh and West Bengal complied well with the major Academic and Non-Academic reforms.

VI. Utilization of Funds & Financial Management

The project was declared effective on March 12, 2003 and closed on March 31, 2009 with 9 months (actual date of closure of project was June 30, 2008) extension to achieve higher objectives and reduce the gap for the second phase of TEQIP. The signed amount was Rs. 15,500 million (US$ 281.2509 million) and nearly US$ 40 million was diverted to aid the Tsunami disaster victims in December 2004. The total funds utilized at the end of the project (as on 30th June 2009) were Rs. 13241.182 millions (99.42%) against the funds release of Rs. 13318.306 millions. CFIs and States also earned an interest of Rs. 391.059 million on grants released for project. The utilization of the funds planned initially did not match with actual utilization of funds as providing training on financial guidelines took time. However, as the project progressed, the funds utilized exceeded the planned utilization of funds. The year wise utilization of funds planned and the actually utilized is represented in figure 6.1 and details of utilization of funds are given in Annexure III.

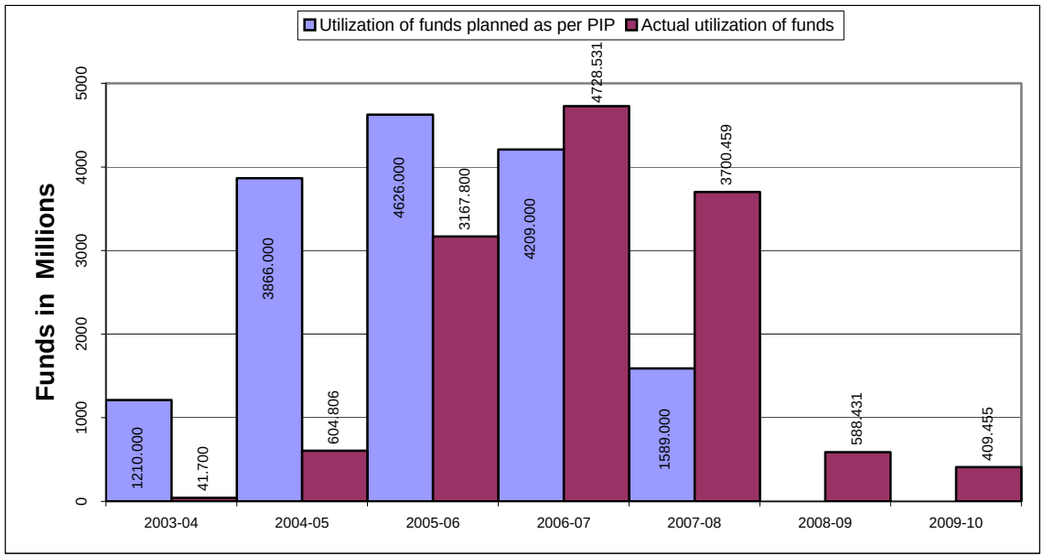


Figure 6.1: Year wise Funds Planned & Actual Utilized

Financial Management Manual was developed by NPIU and made available to all the Project States and Institutions, which included guidelines regarding audit process, instructions, time lines, terms of references and formats, etc, that resulted in better quality Financial Management at the Project States and Institutions. The impact was assessed as the FMRs were being received regularly and timely. The information presented in FMRs matched with the disbursement summary of the World Bank. FMRs were also used as a tool for monitoring the progress on the Project and reviewing the performance of the States and Institutions. The process of the filing the reimbursement claims was based on Statement of Expenditure (SOEs). Adequate training on financial management and reimbursement claim process was given to States and Institutions.

VII. Project Implementation Mechanism

The National Project Implementation Unit (NPIU) was the nodal agency at the National Level for facilitating, monitoring and implementation of the project. The State Project Facilitating Units (SPFUs) of 13 project States performed similar functions for the institutions in their respective States. The 18 Centrally Funded Institutions (CFIs) were facilitated by NPIU. Each institution had a TEQIP cell with a coordinator for academic, procurement and finance.

The above structure functioned very well in the later stages of the project, as each State took its time in forming the SPFU. The SPFU and State Institutions staff got benefited from 12 workshops on Implementation, 12 workshops on Fiduciary Aspects and 14 workshops and trainings on Financial Management and repeated short-term technical assistance throughout Project Implementation by MHRD/NPIU.

All 127 project Institutions undertook a self-assessment on the performance of their Institution. The States of Andhra Pradesh, Haryana, Himachal Pradesh, Gujarat, Karnataka, Maharashtra, Uttarakhand and West Bengal implemented the project well and showed more effective performance and achievements, as the SPFU team maintained the continuity of officials during the entire project period. The States of Madhya Pradesh, Uttar Pradesh, Jharkand, Kerala, Tamil Nadu experienced difficulty in implementing the project due to the frequent changes at the SPFU team of officials.

Monitoring & Evaluation: The project was regularly monitored through organizing bi-annual Joint Review Missions (JRM). Ten JRMs were held at different locations, keeping in view to assist the participating States in the best possible manner. The Principal Secretaries, Directors of State Technical Education, SPFUs, Institution officials and officials from MHRD/NPIU took active part along with the World Bank. The JRMs helped not only in monitoring the achievements, but also gave solutions to the identified problems. It is worth mentioning that in one of the JRMs, Mentoring of Institutions was suggested; through the experienced educationists who provided guidance to the Institutions for effective implementation of the project. Thus, the mentoring of the institutions became the unique feature of this project. Subsequently, seven rounds of mentoring were carried out through mentors who also acted as Guide and Facilitator to help Institutions to achieve both the output and outcome targets, identify delays and shortfalls and suggested remedial actions.

The mentoring of the project was also done through monitoring of the Key Performance Indicators, Post Procurement Audits and Post Civil Works Reviews. The evaluation of the project was done through the Performance Audit, Studies & Surveys.

The details of the Mentoring & Evaluation parameters are given below:

(i) Key Performance Indicators: In pursuance of achieving the institutional development objectives and institutional reforms, the performance of the Project Institution was measured through the key output indicators and outcome indicators. The key output indicators were designed as 1) Number of graduates successfully completing a UG course, 2) Number of PG students, 3) Professional Outputs, 4) Internal Revenue Generation, 5) Number of joint programmes/ activities from formal networking, 6) Services to Community and Economy and 7) Availability of trained institution managers

Similarly, following five outcome indicators were designed as 1) Employment rate and earnings of engineering graduated and postgraduates, 2) Cooperation and resource sharing between TEQIP institutions, 3) Internal efficiency of the engineering education system, 4) Services to Community & Economy and 5) Planning of management of technical education system and the outcome is given below:

- Enhanced Academic Excellence through increased employment rate and earnings of engineering graduates and Postgraduates.
- Enhanced Formal Networking through Cooperation and Resource sharing between TEQIP Institutions.
- Enhanced Internal efficiency of the engineering education system through training to institutional faculty, staff and management.
- Enhanced Services to Community and Economy through involvement of institutions with the community.

- The most significant output of the project was all round encouragement to creative and innovative endeavors demonstrated through publications, patents, R & D, and technology innovations, etc.

(ii) Post Procurement Audits: The World Bank appointed Auditors conducted yearly audit of the Procurement activities undertaken by institutions during the year. On a sample basis Post Procureemnt Audit was done in six State and two CFIs namely the States of Gujarat, Maharashtra, Karanataka, Himachal Pradesh, Tamilnadu and Uttar Pradesh and NIT Hamirpur and VNIT Nagpur. Also all the institutions were advised to conduct self-audits in the later period of the project. The observations made by the World Bank Auditors were sent to the respective State/Institutions for their compliance.

In addition to Post Procurement Audit, the Procurement Management System was also reviewed at NIT Calicut and in the States of Andhra Pradesh and Kerala.

(iii) Post Civil Works reviews: The Post Civil Works reviews were conducted to assess the quality of the construction and its conformity to the design & specifications and timely completion. NPIU, World Bank and SPFUs together conducted the Civil Works review at 10 construction sites in the states of Karnataka, Uttarakhand & West Bengal. Review remarks were shared with the SPFU, identifying areas for improvements and the methods to ensure timely completion of works.

(iv) Performance Audit: A 70-member panel of highly experienced academicians from institutions of repute viz. IITs, NITs, IISc, etc. was formed to carry out rigorous assessment of performance audit. 7 rounds of Performance Audit assessment (perceived scores) and 5 rounds of stakeholders' assessments (calculated scores) were carried out. National averages of the Perceived and Calculated Scores were 8.5 and 7.4 respectively at the end of the project (Annexure IX). The States of Andhra Pradesh, Gujarat and Karnataka achieved scores of 9.1, 9.2 and 8.8 respectively which were above the National Average of Perceived Scores. Similarly, the States of Andhra Pradesh, Kerala, Karnataka, Tamilnadu, Uttrakhand, West Bengal and Himachal Pradesh achieved scores of 8.0, 7.7, 7.6, 7.5, 7.7, 7.9 and 7.5 respectively which were above the National Average for Calculated Scores.

(v) Studies and Surveys: The Project carried out relevant research studies and surveys as discussed below:

1) Study on Assessment of Faculty Development/Training under TEQIP and Approach to Scale-up for Future, with the objectives:

   I) To assess the gains in faculty development/training,
   II) To identify the reasons for deficiencies noticed in meeting the desired objectives for faculty development/ training,
   III) To identify best practices for faculty development/training in the project, and
   IV) To recommend actions for scaling-up faculty development/ training and making the process more effective in future

Conclusion of the Study: Many of the Institutions have a good record of faculty development/training for many years, even in the pre-TEQIP period. However, this has been properly oriented, funded and strengthened during the TEQIP period. This activity has to be nurtured further, maintained and formalized in the post-TEQIP period as well. Although the progress of the TEQIP activities at many of the Institutions was slow in the initial years, subsequent progress was observed to be quite good. It is too early to see the results of faculty development/training initiatives taken up under the TEQIP scheme. However, the initial outcome is indicative of a need to broaden/deepen training in all areas of academic work, like curriculum planning/design, course presentation/ delivery/ examinations etc. The initial results of faculty development/training programs conducted under TEQIP are indeed encouraging. In general, the assessors have observed that due to the participation in the TEQIP, the faculty development/training programs at the institutions got properly oriented, funded and

strengthened. It was also noted that the faculty members and the institutions gained significantly as a result of the TEQIP. For example, the program has given opportunity to the faculty members for up-gradation of their qualification, participation in national/international conferences and participation in various types of training activities making them better equipped professionally. Summary of the study is given in Annexure II.

2) Faculty Satisfaction Survey: The faculty satisfaction survey examined faculty with emphasizes on faculty's working environment. The overall faculty satisfaction increased from 55% in 2006 to 69.1% in 2008.
3) Student Satisfaction Survey: The student satisfaction survey illustrated students' satisfaction of the institutions and also measured how the project improved the quality of engineering education. The average student satisfaction score increased from 6.67 to 8.5 (by 27%) over the life of the project, on a scale of point 10.
4) Implementation Survey: The objective of the implementation survey was to gain an understanding of the design, implementation and impact from the viewpoint of its implementers. The web-based questioner was sent to the officials of SPFUs and project institutions implementing unit and MHRD/NPIU officials.

VIII. Bank Performance: The Bank task team's contributions during Project conception, design, planning and implementation and their visits to various sites and frequent interaction with central and state government officials had significantly helped in making the Project implementation a success.
The World Bank Project team handled the implementation with great understanding and adopted a supportive role. This accelerated clearance of various proposals and Project progress and ensured target accomplishment. Bank officials provided guidance on all issues and fiduciary management, in conjunction with the NPIU to the States. The excellent support provided by the World Bank, its mission members, the architect, consultants and other officials is highly appreciated.

IX. Borrower Performance

During the preparation, the concept was shared and discussed with all the stakeholders and consensus was built for change in the technical education system through an extensive process of consultations with beneficiaries, but some implementation difficulties were encountered in the initial stage. Borrowers learnt from experience during the Project and ensured timely outcomes and achievements. State level implementation mechanism closely monitored the Project and worked for achieving targets. The National Project Directorate guided and facilitated Project implementation at all stages and monitored Project closely with NPIU. During each JRM, NPIU team prepared and delivered to the bank well-documented project implementation progress reports. It enabled the Project States in overcoming obstacles, which impeded developments. Consensus about the strategies and measures was visible right through the Project in all activities.

X. Key Lessons Learnt

- The institutions and States were confused about the concept of Services to community and economy. There was less participation of students and faculty in these activities. For greater participation of students and faculty, an element of incentive could have included in the design.
- The major difficulty was faced by the institutions in implementing the academic reforms due to non-cooperation from the affiliating universities. Formally, the universities were not a part of the project. Also, these reforms require substantial restructuring before implementing. These factors were not taken into account project design. Thus, the project was only partially successful in achieving academic reforms.
- Only 56% of the courses remained accredited at any one particular time over the project period. Thus, a thorough planning was required on the part of the institutions and the system granting the accreditation, as process of obtaining accreditation was slow during the project. The States also needed to take more active role in these issues.

- Networking among institutions was the weak component in the project and needed more conceptual clarity. Networking should have been need based and not by force or restrictions.
- Industry-institution interaction was not monitored properly and thus impact is not seen.

Borrower's ICR: ANNEXURE: I

LIST OF INSTITUTIONS UNDER
TECHNICAL EDUCATION QUALITY IMPROVEMENT PROGRAMME (TEQIP)

L=Lead Institution, N=Network Institution, P=Polytechnic

Centrally Funded Institutions (18)		
1	Motilal Nehru National Institute of Technology, Allahabad (L)	
2	Maulana Azad National Institute of Technology, Bhopal (L)	
3	National Institution of Technology, Calicut (L)	
4	National Institute of Technology, Durgapur (L)	
5	National Institute of Technology, Hamirpur (N)	
6	Malaviya National Institute of Technology, Jaipur (L)	
7	Dr B R Ambedkar National Institute of Technology, Jalandar (L)	
8	National Institute of Technology, Jamshedpur (L)	
9	National Institute of Technology, Kurukshetra (L)	
10	Visvesvarya National Institute of Technology, Nagpur (L)	
11	National Institute of Foundry & Forge Technology, Ranchi (L)	
12	National Institute of Technology, Rourkela (L)	
13	National Institute of Technology, Silchar (N)	
14	National Institute of Technology, Srinagar (L)	
15	Sardar Vallabh Bhai National Institute of Technology, Surat (L)	
16	National Institute of Technology, Surathkal (L)	
17	National Institute of Technology, Tiruchirappalli (L)	
18	National Institute of Technology, Warangal (L)	
Andhra Pradesh		**Govt. Funded/Aided/Pvt.**
19	University College of Engineering, Osmania University, Hyderabad (L)	Government Funded
20	AU College of Engineering, Vishakhapatnam (L)	Government Funded
21	JNTU College of Engineering, Kukatpally, Hyderabad (L)	Government Funded
22	SUV College of Engineering, Tirupati (L)	Government Funded
23	JNTU Institute of Science & Technology, Kukatpally, Hyderabad (Formally known as Institute of Post Graduate Studies and Research, JNTU, Hyderabad) (N)	Government Funded
24	JNTU College of Engineering, Anantpur (N)	Government Funded
25	JNTU College of Engineering, Kakinada (N)	Government Funded
26	Osmania University, College of Technology, Hyderabad (N)	Government Funded
27	Rajeev Gandhi Memorial College of Engineering & Technology, Nandyal (N)	Private
28	Sreenidhi Institute of Science & Technology, Ghatkesar, Hyderabad (N)	Private
29	Bapatla Engineering College, Bapatla (N)	Private
30	Govt. Institute of Electronics, Secunderabad (P)	Government Funded

Gujarat		
31	LD college of Engineering, Ahmedabad (L)	Government Funded
32	DD Institute of Technology, Nadiad (N)	Government Funded
33	Government Engineering College, Gandhi Nagar (N)	Government Funded
34	Government Engineering College, Modasa (N)	Government Funded
35	Govt. Polytechnic, Ahmedabad (P)	Government Funded
36	Dr. S & SS Ghandhy College of Engineering & Technology, Surat (P)	Government Funded
Haryana		
37	Deen Bandhu Chottu Ram University of Science & Technology, Murthal (N)	Government Funded
38	Guru Jambheshwar University, Hissar (N)	Government Funded
39	Kurukshetra University, Kurukshetra (N)	Government Funded
40	YMCA Institute of Engineering, Faridabad (N)	Government Funded
41	Government Polytechnic, Nilokheri (P)	Government Funded
Himachal Pradesh		
42	Govt. Polytechnic College, Sundernagar (P)	Government Funded
43	Govt. Polytechnic College for Women Kandaghat (P)	Government Funded
44	Govt. Polytechnic College, Hamirpur (P)	Government Funded
Jharkhand		
45	Birla Institute of Technology, Mesra (L)	Government Funded
46	BIT, Sindri (N)	Government Funded
47	Government Polytechnic, Ranchi (P)	Government Funded
48	Government Polytechnic, Dumka (P)	Government Funded
Karnataka		
49	Shri Jayachamarajendra College of Engineering, Mysore (L)	Aided
50	Basaveshwar College of Engineering, Vidyanagar Bagalkot (L)	Aided
51	University of Vishweshwaraiah College of Engineering, Bangalore (L)	Government Funded
52	NMAM Institute of Technology, Nitte, Udupi (L)	Private
53	National Institute of Engineering, Mysore (N)	Aided
54	Shri Dharmasthala Manjunatheshwara College of Engineering, Dharwad (N)	Private
55	Poojya Doddappa College of Engineering, Gulbarga (N)	Aided
56	MS Ramaiah Institute of Technology, Bangalore (N)	Private
57	Dr. Ambedkar Institute of Technology, Bangalore (N)	Aided
58	University BDT College of Engineering, Davangere (N)	Government Funded
59	Malnad College of Engineering, Hassan (N)	Aided
60	Siddaganag Institute of Technology, Tumkur (N)	Private
61	Sri Siddhartha Institute of Technology, Tumkur (N)	Private
62	BMS College of Engineering, Bangalore (N)	Aided

Kerala		
63	College of Engineering, Trivandrum (L)	Government Funded
64	College of Engineering, Chengannur (N)	Aided
65	Model Engineering College, Kochi (N)	Aided
66	Sree Chitra Thirunal College of Engineering, Trivandrum (N)	Aided
67	LBS College of Engineering, Kasaragod (N)	Aided
Madhya Pradesh		
68	Jabalpur Engineering College, Jabalpur (L)	Government Funded
69	Shri GS Institute of Technology & Science, Indore (L)	Government Funded
70	Rewa Engineering College, Rewa (N)	Government Funded
71	Rajiv Gandhi Proudhyogiki Vishwavidyalaya, Bhopal (N)	Government Funded
72	Ujjain Engineering College, Ujjain (N)	Government Funded
73	Sardar Vallabh Bhai Polytechnic College, Bhopal (P)	Government Funded
74	Kalaniketan Polytechnic, Jabalpur (P)	Government Funded
Maharashtra		
75	College of Engineering, Shivani Nagar, Pune (L)	Government Funded
76	University Institute of Chemical Technology, Mumbai (L)	Government Funded
77	Veermata Jijabai Technological Institute, Matunga, Mumbai (L)	Government Funded
78	Government College of Engineering, Aurangabad (N)	Government Funded
79	KES Rajarambapu Institute of Technology, Sakharale, Islampur, Distt. Sangli (N)	Private
80	Dr. Baba Saheb Ambedkar Technological University, Vidyavihar, Lonere (N)	Government Funded
81	Walchand College of Engineering, Sangli (N)	Government Funded
82	Yashwantrao Chavan College of Engineering, Nagpur (N)	Private
83	Shri Guru Gobind Singhji Institute of Engineering and Technology, Vishnupuri, Nanded (N)	Government Funded
84	Shri Sant Gajanan Maharaj College of Engineering, Shegaon (N)	Private
85	Government College of Engineering, Amravati (N)	Government Funded
86	Vishwakarma Institute of Technology, Pune (N)	Private
87	GH Raisoni College of Engineering, Nagpur (N)	Private
88	DKTE Society's Textile & Engg. Institute, Ichalkaranji (N)	Private
89	Government Polytechnic Mumbai (P)	Government Funded
90	Government Polytechnic, Pune (P)	Government Funded
91	Government Polytechnic, Nagpur (P)	Government Funded
Tamil Nadu		
92	Government College of Technology, Coimbatore (L)	Government Funded
93	Alagappa Chettiar College of Engineering & Technology, Karaikudi (L)	Government Funded
94	College of Engineering, Guindy, Chennai (L)	Government Funded
95	Madras Institute of Technology, Chennai (N)	Government Funded
96	Government College of Engineering, Tirunelveli (N)	Government Funded
97	Thanthai Periyar Government Institute of Technology, Vellore (N)	Government Funded

98	Government College of Engineering, Salem (N)	Government Funded
99	AC College of Technology, Anna University, Chennai (N)	Government Funded
100	Central Polytechnic College, Tharamani, Chennai (P)	Government Funded
101	DD Government Polytechnic College for Women, Tharamani, Chennai (P)	Government Funded
102	Tamil Nadu Polytechnic College, Madurai (P)	Government Funded
Uttar Pradesh		
103	Harcourt Butler Technological Institute, Kanpur (L)	Government Funded
104	Kamla Nehru Institute of Technology, Sultanpur (N)	Government Funded
105	Institute of Engineering & Technology, Lucknow (N)	Government Funded
106	Madan Mohan Malviya Engineering College, Gorakhpur (N)	Government Funded
107	Bundelkhand Institute of Engineering & Technology, Jhansi (N)	Government Funded
108	Uttar Pradesh Textile Technology Institute, Kanpur (N)	Government Funded
109	Shri Ram Murthi Smarak College of Engineering & Technology, Bareilly (N)	Private
110	United College of Engineering & Research, Allahabad (N)	Private
111	Integral University, Lucknow (N)	Private
112	Dr. Ambedkar Institute of Technology of Handicapped, Kanpur (P)	Government Funded
Uttarakhand		
113	Govind Ballabh Pant Univ. of Agriculture & Technology, Pantnagar (L)	Government Funded
114	Dehradun Institute of Technology, Dehradun (N)	Private
115	Govind Ballabh Pant Engineering College, Paurigarhwal (N)	Government Funded
116	Government Polytechnic Dehradun (P)	Government Funded
West Bengal		
117	Bengal Engineering and Science University, Howrah (L)	Government Funded
118	Jadavpur University, Jadavpur (L)	Government Funded
119	University College of Technology, Calcutta University, Kolkata (L)	Government Funded
120	Netaji Subhash Engineering College, Kolkata (N)	Private
121	Asansol Engineering College, Asansol (N)	Private
122	Govt. College of Engineering & Textile Technology, Serampore (N)	Government Funded
123	Kalyani Government College, Kalyani (N)	Government Funded
124	Haldia Institute of Technology, Haldia (N)	Private
125	Jalpaiguri Government Engineering College, Jalpaiguri (N)	Government Funded
126	Government College of Engineering and Ceramic Technology, Kolkata (N)	Government Funded
127	Institute of Engineering & Management, Kolkata (N)	Private

Borrower's ICR: ANNEXURE: II

SUMMARY OF THE STUDY REPORT ON ASSESSMENT OF FACULTY DEVELOPMENT/TRAINING UNDER TEQIP AND APPROACH TO SCALE-UP FOR FUTURE

The World Bank assisted Technical Quality Improvement Programme (TEQIP) which was started in 2003 has given major focus of attention on faculty development and training to meet the overall project goal of upgraded teaching-learning process. Large number of Institutes, Colleges and Universities throughout the country was selected for TEQIP support. Subsequently the National Project Implementation Unit (NPIU) has conducted a study to assess the effectiveness of the program and to scale-up for future. The study was conducted during October 2008-February 2009 with an objective to assess the gains in faculty development/training during TEQIP project, to identify the reasons for deficiencies noticed in meeting the desired objectives for faculty development, to identify best practices for faculty development/training in the project, and to recommend actions for scaling-up for faculty development/training and making the process more effective in future. For the assessment, 35 representative institutions were chosen and the assessment was conducted as per the guidelines and format provided by NPIU. The assessment was done through visits by the assessors appointed by NPIU at the chosen institutions. The assessors have subsequently submitted reports to NPIU on their findings. The summary of these assessment reports is presented in this Section.

It was noted by the assessors that the institutions have been engaged in faculty development/training programs for many years, even in the pre-TEQIP period. But this was not a well-planned activity. However, this activity is now properly oriented, funded and strengthened under TEQIP, resulting in the institutions getting benefited from the outcome. In general, it was observed that the progress of TEQIP activities at many of the Institutions seems to have been rather slow in the initial years due to various reasons. However, subsequent progress was observed to be quite good.

At majority of the institutions, a comprehensive and systematic Training Need Assessment (TNA) based on the needs of the departments had not been carried out. While only a few Institutions followed the NPIU format exactly, at many Institutions the TNA was sketchy and was done on an ad-hoc basis without following any scientific and/or systematic approach. In view of this, it is necessary that the TNA activity needs to be fine-tuned and microscopic analysis needs to be carried out at departmental level to improve its effectiveness. The TNA format provided by NPIU needs to be simplified.

Almost at all Institutions, initially the number of faculty members undergoing training was low. However subsequently the number had improved and in general, it was observed that 75-100 % faculty members had undergone one or the other training and by and large most of the faculty members have been covered under various training programs. At number of institutes a gap was observed between the total number of faculty members identified after TNA and the actual number who finally went for training. The slippage was largely due to clash of the timing of their commitment at Institution with the timing of the training program.

The institutions have been observed to get substantial gains as a result of the faculty development/training initiatives taken up under TEQIP in the last few years. From the interactions with the faculty members, it was noted that most of the faculty members were happy about the program in general. The significant gain has been achieved in qualification up-gradation.

Notable gains at faculty members' level in the departments are higher level of interest in and commitment to teaching and student related tasks and higher competence in guiding and advising students.
The TEQIP program has resulted in motivating the faculty members to take new initiatives and start certain programs/activities in their own Institutions. Large number of faculty members have initiated steps to upgrade their qualification. Many Institutions have initiated in-house programs for the benefit of the faculty members and conducted conferences and workshops at national as well as international levels. A number of Institutions have established contacts/signed MoUs with universities/research laboratories for faculty development.

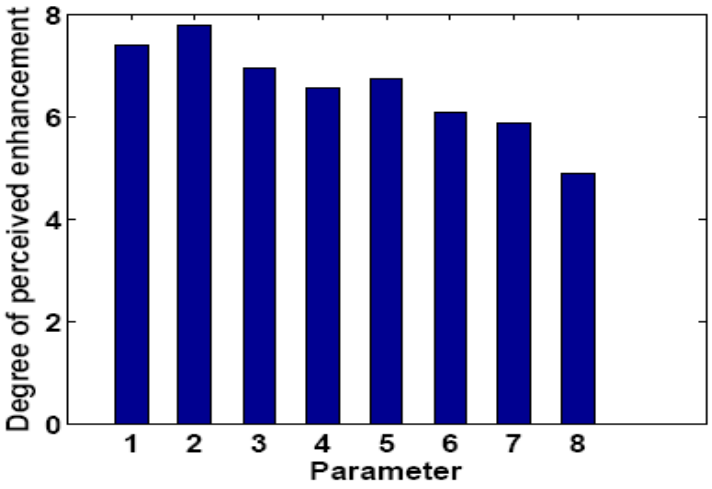
In the TEQIP program, numbers of deficiencies were also observed. As stated earlier, in general TNA was not carried out in a systematic and scientific manner due to various reasons. The faculty development program at many Institutions had been usually a class room exercise with poor industry related participation/contents. At number of Institutions, a wide gap was observed between the TNA and actual deputations of faculty members due to clash of timing of training programs with the academic calendar. Also TEQIP could not lead to better consultancy output primarily due to lack of proper incentives to the faculty members. One important deficiency was that faculty members at few Institutions could not participate/present papers in conferences/programs abroad due to State Govts' bureaucratic policies.

After analyzing the findings of the assessors, a number of recommendations have been made in order to scale-up the program and also to make the faculty development/training more effective.

Conclusion of the Study: Many of the Institutions have a good record of faculty development/training for many years, even in the pre-TEQIP period. However, this has been properly oriented, funded and strengthened during the TEQIP period. This activity has to be nurtured further, maintained and formalized in the post-TEQIP period as well. Although the progress of the TEQIP activities at many of the Institutions was slow in the initial years, subsequent progress was observed to be quite good. It is too early to see the results of faculty development/training initiatives taken up under the TEQIP scheme. However, the initial outcome is indicative of a need to broaden/deepen training in all areas of academic work, like curriculum planning/design, course presentation/delivery/examinations etc. The initial results of faculty development/training programs conducted under TEQIP are indeed encouraging. In general, the assessors have observed that due to the participation in the TEQIP, the faculty development/training programs at the institutions got properly oriented, funded and strengthened. It was also noted that the faculty members and the institutions gained significantly as a result of the TEQIP. For example, the program has given opportunity to the faculty members for up-gradation of their qualification, participation in national/international conferences and participation in various types of training activities making them better equipped professionally. Summary of the study in given in Annexure III.

Bar No.	Parameter
1	Pedagogy
2	Subject Competence
3	Laboratory Development
4	Research Competence
5	Management Skills
6	Continuing Education
7	Qualification Up gradation
8	Consultancy

Parameters for evaluating faculty



Degree of perceived gain capabilities

Borrower's ICR: ANNEXURE: III

(Figures in Million Rs.)

UTILIZATION OF FUNDS (as on 30th June 2009)

State	Project Life Allocation	Cumulative Expenditure	Disbursement
ANDHRA PRADESH	1452.834	1451.154	1451.154
GUJARAT	503.703	498.393	498.496
HARYANA	326.86	322.707	320.885
HIMACHAL PRADESH	79.953	79.452	79.452
JHARKHAND	318.7	318.7	318.7
KARNATAKA	1624.757	1606.577	1604.898
KERALA	529.765	529.95	529.95
MADHYA PRADESH	458.476	444.321	441.297
MAHARASHTRA	1625.594	1625.239	1612.571
TAMIL NADU	961.63	954.68	954.251
UTTARAKHAND	349.951	349.073	346.835
UTTAR PRADESH	625.06	621.262	616.433
WEST BENGAL	1470.97	1468.096	1455.234
Sub Total (A)	**10328.253**	**10269.604**	**10230.156**

CFI + NPIU	Project Life Allocation	Cumulative Expenditure	Disbursement
MNIT Allahabad	170	170	170
MNIT Bhopal	201.2	200.267	200.267
NIT Calicut	211.606	211.606	211.606
NIT Durgapur	210	210	210
NIT Hamirpur	183.634	183.7	179.717
MNITJaipur	85.394	85.394	85.394
DBRANIT Jalandhar	102.7	102.7	102.7
NIT Jamshedpur	93.729	88.484	88.485
NIT Kurukshetra	187.513	177.193	176.392
VNIT Nagpur	200	200	200
NIFFT Ranchi	93.819	90.81	90.81
NIT Rourkela	152.796	152.7	152.7
NIT Silchar	126.78	126.8	126.78
NIT Srinagar	79.252	75.729	75.719
SVNIT Surat	229.3	229.286	229.3
NIT Surathkal	218.654	218.654	218.654
NIT Tiruchirapalli	200	200	200
NIT Warangal	194.1	194.1	194.1
NPIU	125	54.155	54.155
Sub Total (B)	**3065.477**	**2971.578**	**2966.779**

Total (A+B)	**13393.73**	**13241.182**	**13196.935**

Annex 8. Comments of Co financiers and Other Partners/Stakeholders

Not applicable.

Annex 9. List of Supporting Documents

- Government of India 2002, Ninth Five Year Plan.
- Government of India 2007, Tenth Five Year Plan.
- NASSCOM 2005. The NASSCOM-McKinsey Study 2005.
- NPIU 2002, Project Implementation Plan, TEQIP.
- NPIU 2009, Faculty Development Evaluation.
- NPIU 2009, Civil Works Survey.
- World Bank 2002. Project Appraisal Document for TEQIP (Report No: 2423-IN).
- World Bank 2004. Country Strategy for India, IBRD and IDA, Report No. 29374-IN
- World Bank 2003-2009, Implementation Status and Result Reports *Numbers 1 to 14* from 2003 to 2009.
- World Bank 2003-2009, Joint Review Missions Aide-Memoires *Numbers 1 to 10* from 2003-2009.

  World Bank 2009, Findings from the Implementation Survey for TEQIP.

Annex 10: Further Findings from the TEQIP Experience

In this annex, we list specific insights from the implementation experience of the various elements of the project; the relevant lessons should be considered and accounted for in future project design.

- Though a large number of activities were organized under the sub-component of services to community and economy, the institutions did not exploit their full potential as means to enhance teaching-learning and reorienting pedagogy towards problem-solving. Pedagogical change takes time, and learning from the first project on what worked and why should be built upon in future projects.
- While most institutional development reforms related to academic reforms were achieved, there were shortfalls in the achievement of some reforms like credit exemptions/transfers/accumulation. It is likely that institutions faced difficulties addressing those academic reforms that required cooperation and approval from affiliating universities. These universities were not formally a part of the project and would have little incentive to facilitate them. Also, these reforms are not minor and require substantial restructuring and a lengthy process of trial and error before they stabilize. These factors needed to be taken into account in project design.
- The share of accredited programs remained around 56% over project life and the achievements in this activity were due to the jump in the share of programs for which accreditation was applied for. Tracking the status of accreditation of programs over time reveals that the process of obtaining accreditation is slow for a number of reasons, and programs may remain un-accredited for as long as a year. Reasons for slow accreditation include the time taken by the NBA to complete visits and give formal approval and institution specific reasons such as vacant faculty positions which make institutions reluctant to apply. Some states and institutions need to pay more attention to the issue of accreditation. Formal accreditation is one of the few quality assurance mechanisms in India for which an even more powerful role is envisaged in the future as accreditation shifts from being input-based to outcome-based. Prior commitment from the institutions towards accreditation before they receive support may be considered,
- As accreditation is usually given for 3-5 years, there will always be some programs that will not be accredited at any point in time unless there is good planning on the part of the institution and the system of obtaining accreditation is relatively smooth.
- There is clear evidence on the formation of BOGs and their improving functioning over project life. This measure is likely to become the mainstay of how higher education institutions are governed in the future. More information on whether the functioning of BOGs was effective vis-à-vis the mission of the respective institutions and whether as a group they were able to take decisions that enhanced institutional development. Training and orientation of BOG members have been recorded by some institutions as an element contributing to effective BOG functioning, this may be a crucial link to be undertaken in future projects.
- Networking among institutions has been accepted by project institutions as one with potential to increase the scope of resources from which they can draw upon. Future projects can strengthen the functioning of this activity by helping institutions identify their network partners, delineating their roles and responsibilities, and helping with technical assistance to execute them.
- Institution-industry connections were non-systematic and not monitored. The activity itself is a critical element of any education project that is aimed at re-orienting institutions to become more responsive to industry demand for skills and R&D.

- Most data used for monitoring the project was self-reported, on which no independent verification was done. Joint outputs suffered from double-counting. Especially for reforms that are aimed at increasing autonomy, accountability and governance, there is a need to go beyond numbers or binary reporting and understand the processes that are at work. For example, with reliable bibliometric data, it will become easier to judge the value of publications and academic output only in terms of their impact on the sector.
- The concept of institutions generating funds by charging tuition and through providing services (such as consultancy, use of equipment etc) is gaining more acceptability. With greater financial autonomy, IRG can become a robust means for institutional self-sufficiency as without discretion over the use of funds, institutions have weak incentives to generate revenues. IRG can also provide the resources for institutional development that is self-financed.