

**PROJECT INFORMATION DOCUMENT (PID)
APPRAISAL STAGE**

Report No.: PIDA47004

Project Name	Technical Education Quality Improvement Project III (P154523)
Region	SOUTH ASIA
Country	India
Sector(s)	Tertiary education (100%)
Theme(s)	Education for the knowledge economy (70%), Export development and competitiveness (10%), Technology diffusion (10%), Decentralization (10%)
Lending Instrument	Investment Project Financing
Project ID	P154523
Borrower(s)	Republic of India
Implementing Agency	Ministry of Human Resource Development
Environmental Category	B-Partial Assessment
Date PID Prepared/Updated	27-May-2016
Date PID Approved/Disclosed	27-May-2016
Estimated Date of Appraisal Completion	18-Dec-2015
Estimated Date of Board Approval	27-Jun-2016
Appraisal Review Decision (from Decision Note)	The Chair authorized the team to appraise the project up to a loan amount of US\$300 million, with notification, prior to Negotiations, to Bank management of the Government of India's decision on the loan amount.

I. Project Context

Country Context

India is a lower middle-income country with a Gross Domestic Product (GDP) per capita of US \$1,632 (2014 US\$). Average GDP grew at 7.9% per annum between 2001 and 11. This growth was driven primarily by engineering-intensive sectors such as information and communication technologies (ICT), construction and manufacturing. The period also saw persistent efforts by the Government of India to decrease poverty levels and improve human development outcomes. From 2005-12, 137 million people were brought out of poverty, under-5 year mortality decreased from 88.1 to 58.6 per 1000 live births, primary school net enrollment increasing from 85.7% to 98.9%, secondary school gross enrollment increased from 78 to 90 percent and the number of students in tertiary education went up to 20 percent.

As of 2016, the Indian economy is poised to become one of the fastest-growing market economies in the world. GDP growth reached 7.3 percent in 2015 and is predicted to reach 7.5 percent in 2016,

against a global average of 3.1 and 3.6 percent per annum respectively. India's growth, especially in the context of the Government's Make in India strategy and focus on domestic value addition, is again expected to be driven by engineering-intensive sectors, such as ICT, chemicals, transportation, capital goods and infrastructure.

A serious concern is the low average quality of technical skills among labor market entrants in engineering-intensive sectors in India. This is worrying because expanding high quality value-added manufacturing and services depends upon a world-class technical workforce being readily available. Further, within the next 15 years, the country will have the largest, and among the youngest, labor forces in the world, with the potential of being unemployed if they do not acquire skills needed by the economy. In addition to low average quality, a fundamental concern is the highly inequitable distribution of skills among labor market entrants, with differences stark across regions, caste and gender. Nearly 50 percent of India lives in 18 low income states (LIS), hill states, and states of the North East (henceforth, focus states) with poverty rates close to 48 percent and faces the reality of poor development outcomes.

Sectoral and institutional Context

Engineering education in India has grown rapidly in recent years. The intake in undergraduate engineering courses grew at 13.8% annually between 2006-07 and 2013-14. In 2006-07, a little under 7 percent were in engineering courses, while today, 22.8% are enrolled in engineering courses. The growth in engineering education has been part of an overall expansion in technical education, in which enrolment has grown from under 20% to 48.3% over this period. The private returns to technical education are substantial and significantly higher than the returns to general education (Carnoy et al, 2014). The present value of the incremental earning of technical graduates over senior secondary completers is 280% higher than that of general graduates.

Engineering education in India comes under the purview of the Ministry of Human Resources Development (MHRD) at the national level and Departments of Technical Education at the state level. The organizational structure of engineering education in India revolves around three types of apex bodies: All India Council of Technical Education (AICTE), autonomous national accreditation bodies and affiliating technical universities (ATUs). AICTE is a statutory body mandated to promote the quality of technical education in India through planned and coordinated development, and regulation and maintenance of norms and standards. Quality assurance is done through accreditation by two autonomous bodies under MHRD, the National Board of Accreditation (NBA), which undertakes program-level accreditation, and the National Assessment and Accreditation Council (NAAC), which accredits institutions as a whole.

State-level ATUs affiliate the majority of engineering colleges in India, which can be categorized under three types: government, government-aided and private unaided (henceforth private). The ATUs grant affiliation based upon inspections of technical colleges to ensure they comply with regulatory guidelines. At present, there are 15 ATUs that affiliate a total of 4171 technical colleges (AISHE, 2013-14). Most of these colleges are engineering colleges, and the majority (84.6%) is private, accounting for 83% of undergraduate intake. ATUs have large-scale reach, serving a number of functions for all their affiliated colleges (government, government-aided and private unaided), including managing admissions and examinations, setting curricula, and granting degrees. Further, 70% of students pursuing a PhD do so through an academic department of the ATU (AISHE 2013-14).

In terms of outcomes, there are three key areas of concern: employability, research and equity. A recent study conducted by FICCI and the World Bank found that employers were not satisfied with the technical skills of recent graduates. This is in line with an earlier FICCI-World Bank study which found high gaps (the difference between the importance of a skill to employers and their satisfaction with the skill) in technical skills. This persistent dissatisfaction indicates the technical education sector's lack of responsiveness to the needs of employers.

For a country that aims to be a knowledge superpower, India's technical research output is small. Data from the latest R&D survey, conducted in 2010 by UNESCO, shows that India had amongst the lowest number of researchers in R&D per million, at 160, versus 890 in China and 710 in Brazil. In 2013-14, 2540 people completed their PhD in engineering in India; in the United States, 8963 people did the same. A number of top-ranked engineering institutes, such as the Indian Institutes of Technology and select colleges funded under TEQIP I and II undertake R&D; however, this is too little and concentrated in too few institutes to meet the needs of the economy. Further, more R&D is important for generating more PhD students to meet the shortage of faculty in engineering.

There are significant inequalities in access to engineering education, particularly across income groups, gender and region. The percentage of those in higher education who are enrolled in engineering courses rises with each quintile of household consumption expenditure, from 13% in the lowest quintile to 28.7% in the highest. Access to engineering education also varies across states. In the seven low income states (LIS), 17.2% of those in higher education study engineering courses, against 25.7% in other states. Even for those who are able to enroll, the challenge is not over, with specific groups such as students from SC/ST backgrounds and female students having lower transition rates from the first year to the second year, relative to other students, leading to higher dropout rates from students in this category.

Improving these outcomes involves addressing at least three key challenges. First, there is little focus on enhancing learning outcomes; instead the focus is on compliance with input-based norms. The problem is exacerbated by the lack of autonomy in decision-making on academic, managerial, financial and administrative matters. As a result, institutes have limited authority in determining the goals and priorities of their institutes, selecting leaders, faculty appointments, student admissions, the structure and content of programs, financial management, and ultimately, improving student learning. Importantly, the absence of systematic efforts to assess and benchmark the performance of institutes in terms of student learning limits feedback to the system and individual colleges on how and where they need to improve.

The second key challenge relates to faculty vacancies and qualifications. Although the average faculty vacancy rate is low at 13.5% across all AICTE-approved institutes (as of 2014-15), this number is misleading because vacancies are often met by hiring guest lecturers on short-term (less than one year) contracts, creating a lack of stability in the faculty body and constraining medium-term institutional planning and development. Institutes located in remote areas are especially disadvantaged as vacancies cannot be filled even by guest lecturers. Faculty vacancy levels typically debar many colleges from getting NBA accreditation. Importantly, faculty morale is often low. There are few opportunities for faculty to collaborate or avail of professional development offerings. Field visits suggest that salaries are often not paid on time and promotions can sometimes be delayed by several years.

A third major challenge relates to weak incentives and inadequate resources for research. Private colleges, which form the bulk of the sector, rarely have money to invest in research, and their affiliating universities rarely have provisions or centers to encourage collaboration across institutes. With a few exceptions, industry has generally under-invested in R&D carried out in technical education institutions due to the non-excludable nature of R&D, knowledge spillovers, financial market failures and the inherent risks of the R&D process. With little financial autonomy, faculty and the leadership of government colleges have little motivation to undertake research, since the revenue generated cannot be retained by them. The problem is exacerbated by an overall lack of opportunity for student and faculty exchange across institutes in the country and abroad.

The Government of India (GoI) projects, TEQIP I and TEQIP II, with an all-India focus, have attempted to address these problems in a number of ways. Specific achievements include (a) helping 17 regional engineering colleges get upgraded to National Institutes of Technology (NITs); (b) improving quality by helping institutes become autonomous and obtain accreditation; (c) establishing Boards of Governors (BoGs) in colleges that help institutes build both autonomy and accountability; (d) building a performance culture where institutes receive additional funds based on performance against benchmarks; (e) increasing transition rates across all categories of students; (f) doubling of student placement activities; and (g) improving research outputs. Between 2009 and 2014, the number of publications in refereed journals in engineering fields almost doubled from 7,032 to 13,929 in TEQIP II institutes. Given that only a small percent of institutes from the poorer states were able to participate in TEQIP I and II, the impact of the project on these states has been lower than in states with more institutes.

The success of TEQIP I and II has established the World Bank's role in supporting ambitious reform-driven projects in technical education in India. The Bank's engagement in TEQIP I and TEQIP II has also helped it build key networks, within project institutions as well as top-ranking Indian engineering and management institutions, which have been leveraged to initiate a range of quality and governance improvement efforts within project institutions. These networks are expected to play an important role in both helping TEQIP III achieve its objectives, and sustaining the reforms undertaken under the TEQIP series. The Bank will continue to incorporate lessons from projects in other parts of the world.

II. Proposed Development Objectives

The proposed project development objective (PDO) is "to enhance quality and equity in participating engineering education institutes and improve the efficiency of the engineering education system in focus states".

III. Project Description

Component Name

Improving quality and equity in engineering institutes in focus states

Comments (optional)

This component will focus on improving quality and equity in engineering education in all government and government-aided colleges & technical universities, including the ATUs, in seven LIS, eight states in the North East of India, two hill states, and Andaman and Nicobar Islands (a union territory [UT]). These states and UT have been chosen to ensure equitable development of the engineering education system across the country, given their lower performance relative to well-

performing states (referred to as >(other states>(throughout). This component has 3 sub-components:

1.1: Institutional Development for Participating Institutes

1.2: Widening Impact through ATUs

1.3: Twinning Arrangements to Build Capacity and Improve Performance of Participating Institutes

Component Name

System-level initiatives to strengthen sector governance and performance

Comments (optional)

This component will provide technical assistance to MHRD and key apex bodies in engineering education, including AICTE and NBA, to strengthen the overall system of engineering education.

IV. Financing (in USD Million)

Total Project Cost:	403.00	Total Bank Financing:	201.50
Financing Gap:	0.00		
For Loans/Credits/Others			Amount
BORROWER/RECIPIENT			201.50
International Development Association (IDA)			201.50
Total			403.00

V. Implementation

The National Steering Committee (NSC), the National Project Directorate (NPD) and the National Project Implementation Unit (NPIU) will be responsible for overall guidance, policy decisions and, project management, coordination and implementation. The Ministry of Human Resource Development will constitute a 16 member National Steering Committee (NSC). The NSC will meet bi-annually or as often as may be required and will provide the overall guidance and directions to TEQIP-III for maximizing gains from the Project. The NPD will be located within the Department of Higher Education (DHE) in the MHRD and headed by the National Project Director. Under the administrative control and guidance of the National Project Director, it will be responsible for organizing the meetings of the NSC, overall project fund management including central fund releases, monitoring matching fund releases by the States/UTs, and monitoring overall utilization of Project funds, facilitating smooth and efficient working of the NPIU and ensuring adequate staffing of the NPIU during the Project life. The NPD will be assisted by the NPIU. The NPIU will be in charge of the day-to-day implementation of the project at the national level. It will be headed by a Central Project Advisor (CPA).

VI. Safeguard Policies (including public consultation)

Safeguard Policies Triggered by the Project	Yes	No
Environmental Assessment OP/BP 4.01	x	
Natural Habitats OP/BP 4.04		x
Forests OP/BP 4.36		x
Pest Management OP 4.09		x
Physical Cultural Resources OP/BP 4.11	x	
Indigenous Peoples OP/BP 4.10	x	
Involuntary Resettlement OP/BP 4.12		x

Safety of Dams OP/BP 4.37		x
Projects on International Waterways OP/BP 7.50		x
Projects in Disputed Areas OP/BP 7.60		x

Comments (optional)

VII. Contact point

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