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Project Information Document (PID)

Appraisal Stage | Date Prepared/Updated: 15-Aug-2022 | Report No: PIDA33504

BASIC INFORMATION

A. Basic Project Data

Country	Project ID	Project Name	Parent Project ID (if any)
India	P177917	Multidisciplinary Education and Research Improvement in Technical Education	
Region	**Estimated Appraisal Date**	**Estimated Board Date**	**Practice Area (Lead)**
SOUTH ASIA	15-Sep-2022	30-Nov-2022	Education
Financing Instrument	**Borrower(s)**	**Implementing Agency**	
Investment Project Financing	India	Ministry of Education	

Proposed Development Objective(s)

To improve quality, equity and governance in technical education in select states.

Components

Improving quality and equity in participating institutions
Improving research for better skills, entrepreneurship and innovation
Sector steering, including governance and internal and external quality assurance

PROJECT FINANCING DATA (US$, Millions)

SUMMARY

Total Project Cost	560.00
Total Financing	560.00
of which IBRD/IDA	280.00
Financing Gap	0.00

DETAILS

World Bank Group Financing

International Bank for Reconstruction and Development (IBRD)	280.00

Non-World Bank Group Financing

Counterpart Funding	280.00
Borrower/Recipient	280.00

Environmental and Social Risk Classification

Moderate

Decision

The review did authorize the team to appraise and negotiate

Other Decision (as needed)

B. Introduction and Context

Country Context

1. **India's growth rebound in FY21/22 was quick, pulled up by investment, recovering consumer demand and, a low base.** Real GDP growth moderated from an average of 7.4 percent during FY14/15-FY18/19 to an estimated 3.7 percent in FY19/20[1]. mostly due to (i) shocks to the financial sector, and (ii) decline in private consumption growth. Against this backdrop, the outbreak of COVID-19 had a significant impact, with real GDP contracting by 6.6 percent in FY20/21. On the fiscal side, the general government deficit widened significantly in FY20/21, owing to higher spending and lower revenues[2]. However, with the easing of Covid-19 restrictions, Goods and Services Tax (GST) collections have crossed the INR 1 trillion mark every month since July 2021, reaching as high as INR 1.67 trillion in April 2022. The robust GST revenue collections are expected to continue as the economic recovery gathers momentum. The real GDP in FY21/22 expanded by 8.7 percent and exceeded the FY19/20 level, on the back of increased capital expenditure by the government and recovering consumer demand. Given the global concerns on significant uncertainty around the pandemic, elevated inflation, geo-political tensions, and extended supply disruptions, growth in FY22/23 is expected to be 7.5 percent[3].

2. **Although India has made remarkable progress in reducing absolute poverty in recent years, the COVID-19 outbreak has delayed the course of poverty reduction[4]** Between 2011-12 and 2020-21, India's poverty rate has declined from 22.5 percent[5] to values estimated to range between 9 to 12.3 percent[6]. However, projections of GDP per capita growth suggest that this estimated decline also includes a reversal of poverty reduction due to the pandemic[7]. Labor market indicators from high frequency surveys -including from the Centre for Monitoring Indian Economy (CMIE)- suggest that vulnerability has increased after the pandemic, particularly for urban households, with a moderate recovery in 2021. Overall, the pandemic and its economic impacts are

[1] National Accounts Data, National Statistical Office, Ministry of Statistics and Program Implementation (MOSPI) – also following data.
[2] Union budget 2021, 2022, Ministry of Finance.
[3] World Bank real GDP forecasts for FY22/23 published in June 2022.
[4] World Bank projections. The Government of India has deployed significant resources for social assistance, including towards urban poor households and migrants.
[5] Consumption Expenditure Survey 2011-12, National Sample Survey Office (NSSO), Government of India.
[6] World Bank estimates. Macro Poverty Outlook, October 2021.
[7] World Bank estimates. Source: Macro Poverty Outlook, 2020.

estimated to have raised urban poverty, creating a set of "new poor" that are relatively more likely to be engaged in the non-farm sector and to have received at least secondary education. In order to respond to the pandemic, GoI has deployed significant resources as part of the Prime Minister Garib Kalyan Yojana (PMGKY) for social assistance, including for urban poor households and migrants.

3. **Addressing these challenges for sustainable, inclusive and green growth will require focused human capital investments, particularly in technical tertiary education.** Post-crisis, growth is expected to be driven by innovation, including in engineering intensive sectors contributing to an increasingly green economy. Manufacturing, construction, retail and services, are expected to accelerate growth over the next decade.[8] While India battles the impact of climate change, it needs to develop and implement green policies, create green jobs and advance green technologies, and tertiary education[9] is at the heart of this forward-looking agenda. Technological innovation as well as adaption requires highly skilled individuals. Training graduates for a future innovation-driven labor market are human capital investments delivered via technical tertiary education.[10] However, the low quality of skills among tertiary – including technical - education graduates is a serious constraint to green growth. Addressing this, and the underlying constraints, will be central to India's growth agenda.

Sectoral and Institutional Context

4. **India has one of the largest and fastest growing tertiary education systems in the world, and technical education has received much emphasis**, given its potential to drive growth and produce advanced skills for innovation. The tertiary education sector has grown rapidly; enrolling 29 million students in 2011/12 to 39 million students across 40,000 institutions in 2019-20,[11] and is expected to continue growing over the next decade. Although the sector is among the largest in the world, the current gross enrollment ratio (GER) of 27 percent lags several advanced and comparator countries and is behind the world average of 40 percent (USA and Russia > 85 percent; China and Brazil > 50 percent). Enrollment in engineering programs has also grown, going from 8 percent in 2008-09 to 12 percent in 2019-20.[12] Close to a million students graduate from engineering and technology programs annually. The enrollment rate in undergraduate (UG) engineering in India (12 percent) is comparable to some advanced countries like the USA (11 percent) but lower than that of China (34 percent). Enrollment at the postgraduate (PG) level however (4 percent) is significantly behind comparators (USA – 13 percent; China – 38 percent).

5. **The quality of inputs and outputs have not kept pace with expansion in the technical education sector.** Reports have consistently flagged low employability of technical education graduates. The latest India Skills Report (2021) notes gaps not only in student technical skills, but also in non-technical employability skills – such as numerical and logical reasoning, English language and inter-personal communication, adaptability, and conflict resolution.

[8] McKinsey Global Institute (2020). India's Turning Point.

[9] 'Tertiary education' refers to all formal postsecondary education, including advanced vocational education, professional education and short-cycle programs while 'higher education' is primarily used for tertiary education leading to an academic degree. In keeping with the NEP proposal of an integrated system for India that includes university, vocational and professional education, the term 'tertiary education' has been mainly used in this note.

[10] Technical education in India includes programs in Engineering and Technology, Architecture, Management, Town Planning, Pharmacy and Applied Arts and Crafts. Engineering and Technology programs make up the majority in terms of provision and enrollment and 'technical education' is used here for Engineering and Technology programs.

[11] All India Survey of Higher Education (AISHE), 2019-20.

[12] Tilak, J. B. G. (2021). Paradoxes and contradictions in the growth of engineering education in India.

6. **Several factors undermine the quality of technical education programs, beginning with what is taught and how it is taught.** (i) Programs lack application orientation[13] and are often not aligned with labor market demands owing to ad-hoc or weak linkages with industry.[14] Limited autonomy over the content of programs[15] and weak quality assurance activities prevent regular revision of curricula, setting standards and establishing systematic industry-TEI connections that are needed to improve the labor market significance of programs. (ii) Pedagogical practices used are ineffective and few faculty participate in professional development activities.[16] The experience from COVID-19 has also shown a lack of experience with modern teaching and learning technologies, limited digital skills and low motivation among faculty to adopt new instructional pedagogies.[17] (iii) There are few opportunities for internships and industry-facing experiences for students. Fewer than half of all engineering students participate in internships (40 percent) losing out on opportunities for deep learning that can be acquired through project-based work and building workplace readiness. (iv) The growing need for interdisciplinary and systems-based approaches, and advanced cognitive, digital and socioemotional skills needed for jobs require making courses and programs multidisciplinary. Most undergraduate technical education students in India, however, have never taken an interdisciplinary science course.[18]

7. **The overall research environment needs improvements** in most engineering institutions, except for elite institutions like the Indian Institutions of Technology and National Institutes of Technology. In India, per student R&D spending ($91) is lower when compared to Russia ($280), China ($750) and Brazil ($1500). Research and laboratory facilities are inadequate leading to lower quantity and quality of research publications.[19] Although the number of PhD degrees awarded in engineering and technology has increased (18 percent of the total number of PhD degrees awarded in 2018-19 were in engineering and technology, up from 5 percent in 2005), this is much lower than comparator countries like the U.S. and China.

8. **Most engineering colleges have weak research and innovation linkages with industry and society.** The AICTE-CII Survey on the State of Art of Industry-Academia Partnerships reveals that out of 9581 technical education institutions (TEIs), 504 TEIs have incubated at least one start-up and 525 TEIs founded 2-4 start-ups in the past two years. Only 134 TEIs have nurtured 11 and above start-ups within their in-house incubation centers. International good practice has demonstrated there can be substantial economic and social yields by creating innovation ecosystems that leverages connections between TEIs, industry, financial services, and the society to address crucial gaps in resources and increasing the relevance of the engineering degree.

9. **Socio Economically Disadvantaged Groups (SEDGs) are not sufficiently represented in engineering education.** Scheduled Caste (SC) and Scheduled Tribe (ST) make up 11 and 3 percent respectively of UG engineering students, significantly less than their population proportions. Less than 30 percent of UG engineering students are women, compared to about 50 percent each in other disciplines like Arts, Commerce and Science.

10. **Weak academic preparedness prior to entering technical education prevents disadvantaged students from accessing technical/engineering education.** At the secondary and higher secondary level, more than half

[13] Loyalka, P. et al. (2016): Factors Affecting the Quality of Engineering Education in the Four Largest Emerging Economies, *Higher Education 68* (6): 977-1004.
[14] Report by the committee led by BVR Mohan Reddy on 'Short and medium-term perspectives on engineering education in India' highlights the need for strengthening industry-academia partnerships, especially in non-elite institutions
[15] This is the case for non-autonomous engineering colleges that make up the majority of the sector.
[16] Past and recent surveys show that few faculty take part in professional development training – almost half of university faculty have not received any training in the use of digital technologies for teaching and learning prior to the pandemic.
[17] Tognatta N. (2021). Digitalization in tertiary education in India. Draft report prepared under the India Tertiary Education ASA.
[18] Loyalka, P. et al.(2016): Factors Affecting the Quality of Engineering Education in the Four Largest Emerging Economies, *Higher Education 68* (6): 977-1004.
[19] Ibid.

of all students struggle with math and English comprehension.[20] Gaps in foundational skills lead to weaker conceptual grasp of more advanced topics. Cross-country evidence indicates that incoming UG engineering students in India have lower math and physics skills compared to those in the United States, Russia and China.[21] Further, among Indian students, first generation students, girls and SC/ST students begin college behind their counterparts in all skills, technical as well as higher order. For students that make it to engineering programs, there is an urgent need for good quality catch-up programs and career support to help prevent drop-out and support completion as well as access to the labor market.[22]

11. **Continuous growth of the system requires customized governance arrangements and a strong emphasis on accountability.** The quality challenges discussed are attributable to two main system-level challenges – the unplanned and unbridled growth of engineering education, specifically the private engineering sector, and weak and ineffective governance mechanisms**.** About 85 percent of the enrollment in engineering program is in private institutions,[23] up from 15 percent in the 1960s.[24] Many of the private technical colleges do not adhere to established quality assurance (QA) mechanisms nor have they developed institution-internal QA procedures. These institutions remain unaccredited and unchecked which means that there is a lack of clarity concerning the quality of provision and a lack of incentives for quality enhancement.[25] States and accrediting bodies need to provide more hands-on guidance and transparent regulations to engineering colleges.

12. **Faculty is one important determinant of the quality of teaching and learning; however, there is a persistent problem of faculty shortages and preparedness resulting in overall lower quality of provision.** Faculty vacancies range from 30 to 50 percent in state universities and can be as high as 40 percent even in the leading TEIs of technology in the country. These high vacancies are partly related to the low supply of doctoral degrees and partly a result of a cumbersome recruitment and faculty management approach. This has led to underqualified candidates serving as faculty with serious implications for the quality of education delivered[26] and TEIs' ability for medium-term planning and development.

13. **There is a need for strategic steering and enhanced implementation capacity at the state level**, including systematic data collection and analysis, translation of central-level reforms into state-level regulations, guidelines, and implementation capacity for strategic planning and a strong link between strategic goals, governance, QA and financing. At the system level, regulatory bodies have overlapping jurisdiction, limited powers and few resources for enforcement while the current funding system is not designed to incentivize institutional performance.[27] The NEP recommends greater empowerment and autonomy to institutions to innovate, including by gradually phasing out the system of 'affiliated colleges' towards a system of graded autonomy. Enabling a large network of – often very small[28] – institutions with limited capacity to achieve autonomy will require guidance and support from the central- and state-level.

[20] https://palnetwork.org/wp-content/uploads/2018/01/ASER-2017-Beyond-Basics-Report.pdf
[21] Loyalka et al. (2021). Skill levels and gains in university STEM education in China, India, Russia and the United States. *Nature Human Behavior* 5, 955.
[22] The evidence shows that a small share of women pursuing science subjects in postsecondary convert it into a career. See for example, https://www.niti.gov.in/writereaddata/files/document_publication/Final_Report_Women_In_Science_SSESS.pdf
[23] Author analysis of enrollment data for 2019-20 from AICTE dashboard accessed from https://facilities.aicte-india.org/dashboard/pages/dashboardaicte.php
[24] Indian Higher Education Reform: From Half-Baked Socialism to Half-Baked Capitalism, Devesh Kapur and Pratap Bhanu Mehta, Center for International Development at Harvard University, 2004.
[25] See, for example, Patil, J., and L. Pillai. 2015. "Quality assurance in Indian higher education: Role of NAAC and future Directions." In *India Higher Education Report 2015*, edited by N. V. Varghese and G. Malik. London and New York: Routledge, pp. 137–162. https://doi.org/10.4324/9781315651163.
[26] Loyalka et al. (2016) find that the proportion of faculty with Ph.D. degrees is significantly related to the "value-added" of engineering programs.
[27] NEP 2020.
[28] About 65 percent of colleges in India have fewer than 500 students as per the enrolment data from All India Survey on Higher Education (AISHE) 2019-20

14. **To address the issues outlined above, the Government of India's Technical Education Quality Improvement Project (TEQIP) series (3 phases between 2004-2021) helped initiate a reform process promoting excellence, autonomy and accountability.** Specific achievements under the TEQIP series include (a) improving quality by helping TEIs obtain program accreditation and become autonomous, (b) 17 regional engineering colleges upgraded to National Institutes of Technology, (c) establishing a low-stakes student assessment system, (d) improving research facilities and outputs through competitive research grants and support for PhD training, (e) establishing Boards of Governors (BoGs) in colleges to help TEIs build autonomy and accountability, (f) building and leveraging networks among project institutions and with leading institutes of technology and management to improve quality, (g) helping select states develop faculty reform plans to address faculty shortages, (h) doubling placement activities, and (i) building a performance culture which incentivized performance against benchmarks. To expand its impact, the project focused on low-income states in the third phase since previous phases included only a few TEIs from these states. The TEQIP series has created considerable momentum and interest among state governments to continue reforms in the technical/engineering education sector.

15. **The National Education Policy[29] (NEP 2020) renews the focus on the constraints described and offers a suitable framework for investments aiming to modernize tertiary education in India.** Implementation of the NEP reforms will require a plan that unpacks its various provisions, and the establishment of accountable, transparent mechanisms at the central and the state levels. Beginning this process in the technical education sector leverages the experience from the TEQIP series and can bring to the fore lessons and examples required for further scale up of reforms across the tertiary education system. Working with reform-minded states will help advance technically demanding reforms and share good practice across the country and institutions.

16. **Global trends for engineering education also attest to the reforms highlighted in the NEP.** The global state of the art in engineering education[30] emphasizes preparing students for the challenges of the future (including climate and demographic change and the move towards more resilient and inclusive societies) as well as future scenarios of work that will involve working with complex approaches and systems that are highly networked. This calls for socially relevant and outward-facing engineering curricula, coupled with a broadening of student experience, inter alia in the context of new multidisciplinary programs as well as focus on employability, entrepreneurship and better connections to industry.

C. Proposed Development Objective(s)

Development Objective(s) (From PAD)

To improve quality, equity and governance in technical education in select states.

Key Results

17. The Project will track the following key performance indicators to measure progress towards achieving its Project Development Objective (PDO):

18. PDO Level Indicators:

- Improvement in student learning achievement (Quality)
- Increase in student transition rate[31] (by gender and SC/ST) (Equity)
- Outcomes of Competitive Research Grants (Research Quality)

[29] https://www.mhrd.gov.in/sites/upload_files/mhrd/files/NEP_Final_English_0.pdf
[30] Graham (2018). The global state of the art in engineering education. Massachusetts Institute of Technology.
[31] Transition rate from the first year to the second year

- Share of eligible UG programs accredited[32] at participating institutions (Quality Assurance)
- Share of participating institutions with active Board of Governors (Governance)

D. Project Description

19. Activities financed under the project are organized under three components aligned with the PDO and focus on enhancing the quality of technical education (teaching-learning and research) and enabling quality improvement through strengthened quality assurance and governance mechanisms. First, the project will provide support to improve service delivery and quality in participating institutions through the upgradation of facilities, building digital capabilities and expanding student support services to improve equitable access, skills and transitions to the labor market. The component will also support participating institutions pilot multidisciplinary approaches. The second component focuses on increasing the quantity and quality of research and development activities at participating institutions through a competitive research funds program and support innovation and entrepreneurship through centers of excellence and the establishment of incubation centers. The third component includes activities designed to strengthen quality assurance in participating institutions and governance of the sector by building capabilities at the state and central levels.

20. **State selection is based on eligibility criteria that include equity dimensions, state capability and state's commitment to implementing NEP reforms.[33]** The technical education sectors in select states represent different levels of capacity with varying needs and requiring different levels of inputs. This will enable the project, designed as a learning and demonstration project, to utilize lessons and results from a range of select states to inform the future design and implementation of interventions across a larger number of states in India. Inclusion of institutions from select states will be based on specific eligibility criteria required for successful implementation of project activities. The project will support around 275 public technical institutions comprising engineering institutions, including Affiliating Technical Universities and State Universities with Departments of Engineering and polytechnic institutions across select states. In addition, the project will support National Institutes of Technology (these comprise centrally funded technical institutions benefitting current and prospective students in states across the country).

Component 1 - Improving quality and equity in participating institutions

21. **This component will focus on improving quality, employability, and equity in technical education in participating government and government-aided institutions in select states** and will finance activities that contribute to achieving PDO indicators on improving student learning, increasing the share of programs accredited and improvements in transition rate of undergraduate engineering students in participating institutions, especially those belonging to underrepresented groups. This will be achieved through curricula upgradation, strengthened faculty skills, expanding student services and modernizing education delivery at participating institutions. The component will fund procurement expenses including refurbishment/upgradation in participating institutions, minor civil works, equipment, IT facilities, software and maintenance and digitalization.

Sub-Component 1.1 Strengthening institutions to enhance student skills and employability

22. Under this sub-component the project will seek to strengthen participating institutions with the goal of –

[32] Eligible programs at participating institutions.

[33] The following states/UTs have been selected by MoE in accordance with the process and principles described: Assam, Bihar, Chhattisgarh, Odisha, Jharkhand, Karnataka, Madhya Pradesh, Himachal Pradesh, Haryana, Chandigarh, Maharashtra, Gujarat, Telangana, Uttarakhand and Uttar Pradesh. Two to three additional states might be included in the project. Any successor(s) to this list or two to three other states may be included in the project based on written agreement between the Government of India and the World Bank.

(a) improving student learning and employability; (b) strengthening faculty capabilities; (c) enhancing the labor-market relevance of engineering programs; and (d) modernizing the education environment.

In order to achieve these goals, project institutions are expected to undertake activities that include upgrading of curricula in consultation with industries, training students in emerging technologies and employability skills, student internships and enhancing digital capability of participating institutions.

23. Polytechnic institutions will be selected and included in phases. In the first phase, polytechnics governed by the State Departments of Technical Education and/or affiliated with the Affiliating Technical University would be included for support.[34] Support for polytechnics will be targeted to improve relevance of their training programs and employability of graduates through support for curricula upgradation, improvement of laboratories and equipment, capacity building for faculty and industry-certified training for students.

Sub-Component 1.2 Promoting equitable access

24. To improve transition rate of undergraduate students in project institutions, the sub-component will finance developmental courses and the development and distribution of materials/educational resources, including in Indian languages, to support students close learning gaps. Proactive academic advisement by faculty, counseling and peer support services for students will be established and strengthened to improve student adjustment. The project will support widening access to technical education to underrepresented groups (girls, SC/ST and rural students) through outreach programs organized by participating institutions. Institutions will also be supported to offer programs designed to build interest in engineering and technology among high school students, especially girls.

Sub-Component 1.3 Promoting multidisciplinary education

25. Multidisciplinarity can be viewed in three distinctive ways: (i) within existing programs, students already have more choice to include courses beyond their core technical programs; (ii) programs can be designed and implemented integrating two or more main disciplines (e.g., mechatronics, biotechnology); (iii) institutions can be set up or developed in such a way that they promote multidisciplinarity throughout. With (i) already in place, the project will focus on (ii) under Component 1 and support participating institutions to introduce multidisciplinary programs. Institutions will receive support from leading institutions of technology with experience in implementing multidisciplinary courses/programs to operationalize and implement their multidisciplinary approach. AICTE will develop model curricula for multidisciplinary programs to be utilized by institutions.

Component 2: Improving research for better skills, entrepreneurship and innovation

32. Component 2 will support better research and innovation outcomes via competitive funding for research and technology transfer, strengthening of business incubators, seed funds to entrepreneurs, and building an institutional entrepreneurship and innovation culture. This will require support for suitable research infrastructure and mechanisms to support incubation at the institutional level which will, inter alia, strengthen post-graduate programs.

Sub-Component 2.1 Competitive Research Fund (CRF) and Centers of Excellence (CoEs)

This sub-component will support better research outcomes and strengthen the quality of Ph.D. training. It will address specific strategic sectors for the country's socio-economic development through a Competitive Research

[34] State Departments of Technical Education and/or Affiliating Technical Universities will oversee activities in polytechnics selected under the project. Additional polytechnics in states where they are governed by State Boards of Technical Education can be included in the project in a second phase following the fiduciary and safeguards assessments required for their inclusion and based on mutual agreement between the GoI and the Bank.

Fund (CRF) and Centers of Excellence (CoEs). Priority sectors will include, inter alia: climate change/environment; health; food security; water management; sustainable energy; and IT/telecom (especially artificial intelligence, cybersecurity, cloud computing, and big data).[35] Investments in climate change/environment research will be prioritized to strengthen the capacity of the central and state governments to mainstream climate change activities within key economic sectors through skills and technology development. The selection process of the applications to CRF and CoE scheme will be rigorous, transparent, merit-based, and consistent with international standards for higher education and research funding organizations.

Sub-Component 2.2 Developing incubation and innovation eco-systems

33. The COVID pandemic has accentuated the role of an innovation ecosystem that leverages connections between higher education institutions, industry, and society to address crucial gaps in resources and increase the relevance of engineering degrees. Such an ecosystem approach could yield multiple benefits such as providing an impetus to reskilling/upskilling efforts, facilitating research and development cooperation, and fostering collaborative synergies with society. To build a stronger innovation eco-system between the MERITE institutions and industry and society, the project will support selected institutions in establishment of new incubation centers or supporting already existing ones.

Sub-Component 2.3 Institutional research and innovation capacity building

34. The project will support *all* participating institutions build their capacity for research and innovation, including to carry out the activities detailed above. Activities will include capacity building courses for faculty and PhD students; support for grant applications with a special emphasis on female researchers (aligned with 2.1); support for pre-incubation activities like establishing and running maker labs, skills labs (including tools, software, fabrication machines), hackathons and other activities related to entrepreneurship.

Component 3: Sector steering, including governance and internal and external quality assurance

35. MERITE is intended to pilot NEP reforms in governance and QA.[36] The move towards institutional autonomy of affiliated colleges will require the strengthening of institutional governance, internal quality assurance (IQA) and overall capacity. This component will support the states and institutions to build this capacity through peer exchange and training measures on a large scale through dedicated grant schemes. It will also help revise institutional structures, by supporting the establishment of boards and curricula consultation mechanisms (see Component 1), bringing in employers and other key stakeholders and providing strategic directions for institutions.

Sub-Component 3.1 Quality assurance

36. The NEP highlights the "universality" of accreditation[37] as a key reform element, i.e., all tertiary education institutions will need to be accredited going forward in accordance with Indian regulations and international good practice. To achieve this "universality", central-level bodies will need to be supported to expand their scope, states will translate central action into supporting measures and institutions need to prepare for accreditation (or re-accreditation) while gearing up their internal quality assurance procedures and structures. Related activities under the project will include the establishment and upgrading of institution-level QA Units and training

[35] The priority sectors will be discussed with the MoE.
[36] For the role of governance and QA in sector steering, see for example "Steering Tertiary Education. Toward Resilient Systems that Deliver for All", World Bank. 2021.https://thedocs.worldbank.org/en/doc/d55b6be748e5e2849e28fbe74fe5e362-0200022021/original/Steering-02-3-web.pdf
[37] The tertiary education sector will continue to rely on two types of accreditation: i) at the institutional level (currently carried out by NAAC) (here is an important link to Sub-component 3.2 as this requires institutional autonomy to fully develop a quality system which fits with the institutional mission) and ii) at the program-level (carried out by NBA) to strengthen technical education programs.

of staff and administrators (including for the development and dissemination of institutional quality policies, self-assessment reports and preparation of accreditation procedures on the institutional side). The project will also establish and support state-level QA cells to guide institutions on their way towards accreditation/autonomy while also carrying out state-level monitoring of quality indicators. The development of strong internal QA and move towards an institutional "quality culture"/"quality profile" is needed to provide a sound basis for accreditation. procedures

Sub-Component 3.2 Governance

37. Phasing out of the affiliation system is another key aspect of the NEP. It will require a medium-to-long term step-by-step approach, implementation of a concept of "graded autonomy" as well as profound capacity building at the institutional level to help institutions to strengthen their management, administration and planning capacity and move towards institutional autonomy. Capacity-building needs to include cross-institutional mentoring of affiliated institutions as a basis for future autonomy/phasing out of the affiliation system as well as significant guidance from central and state governments. At the institutional level, it needs to ensure that there are well-functioning Board of Governors in place and management teams have the capacity and instruments to steer their institutions towards quality provision aligned with the demands of the economy and society. Well-functioning governance and quality assurance is also warranted to make institutions more resilient beyond teaching, learning and research processes and ensure that they are fully operational even under adverse conditions, like the COVID pandemic. Further, states need to be supported when transforming their institutional networks in the context of this policy reform. The move towards autonomy and a strong, "fit-for-purpose" (e.g., in terms of efficiency and equity) network will, further, require training of management, administrators and staff and other forms of capacity building.

38. Governance finally needs to be strengthened though better information which allows for evidence-based policy making. At this stage, information on graduate outcomes is patchy, hampering the steering of the sector and institutions towards better quality and relevance of provision. This can be mitigated through a graduate tracking system (GTS) which would be developed and piloted in one or two states and later be rolled out.

Sub-Component 3.3 Leadership training and academic careers

39. The activities outlined in Component 2 and 3 will be enabled through support for training and development for faculty and institutional leadership. Training for faculty will focus on upgrading their subject content knowledge and bring it in line with currently in demand topics and standards, and on didactics and pedagogical methods for improved student learning, including the use of digital tools for teaching and student assessments. The IITs and IIMs will receive funds to develop training programs and deliver training to faculty and institutional leaders from participating institutions.

Sub-Component 3.4 Project management & Technical Assistance

40. The objective of this sub-component is to support project management, monitoring and evaluation (M&E), and technical assistance (TA) in order to ensure efficient and effective management of project implementation. To this end, the proposed project would finance consultant services to adequately staff the NPIU and SPIUs (the project would finance, *inter alia*, the recruitment of consultants in procurement, financial management, contract management, safeguards as well as M&E), as well as training and capacitity building for NPIU and SPIU staff. The project would also cover expenses directly related to project implementation, financial audits and monitoring and evaluation (M&E) - including the monitoring of environmental and social aspects.

Legal Operational Policies

	Triggered?
Projects on International Waterways OP 7.50	No
Projects in Disputed Areas OP 7.60	No

Summary of Assessment of Environmental and Social Risks and Impacts

54. The Environmental and Social risks/impacts for the proposed project may arise from upgrading/rehabilitation/refurbishment of existing buildings (or parts of it), establishment/renovation of research facilities and augmentation of digital infrastructure, required for activities proposed under Components 1 (specifically 1.1) and 2. Proposed interventions under Components 1 and 3, on the other hand, offer an opportunity to strengthen systems that promote green/clean/safe teaching-learning environment in the institutions and strengthen EHS/green elements in the curriculum. The risks and likely impacts are rated 'moderate' and are predictable and expected to be temporary, reversible, low in magnitude and site-specific.

55. **Environment Risks/Impacts:** The environmental risk assessment considers, in an integrated manner, the following: (i) type/nature and magnitude of activities; (ii) geographical spread of sub-projects (about 275 institutions across multiple participating states); (iii) baseline conditions, characterized by significant variation in locational setting, natural environmental conditions, student strength, types of courses offered (with associated workshops/laboratories and other infrastructure) and physical/built environment conditions; (iv) involvement of multiple/diverse stakeholders with varying institutional capabilities; (v) risks pertaining to inappropriate design of buildings and infrastructure, including inadequate provisions for 'universal access' and for fire, electrical and safety in laboratories and hostels; (vi) potential impacts related to construction works, including on residents/users of the campus and occupational health and safety risks to workers; (vii) lack of experience of small contractors in managing environment, health and safety (EHS) issues associated with construction works; (viii) water stress during construction and operation of buildings (large number of districts in the country face high to extremely high water shortage in summers); (ix) issues associated with operation and maintenance (waste management in laboratories, workshops, hostels, mess/canteen; e-waste management; emergency preparedness, including evacuation; menstrual hygiene management etc.) and; (x) inadequate coordination and monitoring mechanisms on environment management aspects. While the environmental impacts are likely to be limited to the perimeter of the institutional campuses, dedicated effort, time and coordination will be required to preclude any unwarranted effects during operation/maintenance stage. These efforts will also be required to maximize opportunities of demonstrating environmentally sustainable, green, safe, and resilient facilities.

56. **Social Risks/Impacts:** Social risks related to the Project include: (a) the labor and working conditions of construction contractors as delineated under ESS 2; (b) community health and safety as indicated in ESS4; (c) ensuring participation of vulnerable groups[38] (as defined under ESS 7) through equitable access to project benefits and opportunities; (d) risks related to the exclusion of stakeholders consultations and engagement as implied in ESS10; and (e) hiring of child labor for civil works. In addition, considering that the envisioned civil works would be mainly undertaken in the institutions, it is critical to ensure preventive measures on GBV/SEA of

[38] Under the MERITE project, the term 'vulnerable group' has been used to define communities that meet the criteria set out in paragraphs 8 and 9 of the ESS 7 standards. Vulnerable persons also include but are not limited to: people belonging to SC, women, and people with disability; people from remote/rural areas; and SEDGs (Socially and Economically Disadvantaged groups).

students and workers and maintain the health and safety of students, teachers, non-teaching staff, vendors, visitors, and nearby communities throughout the implementation of the works. No adverse impacts such as involuntary land acquisition and effects on indigenous peoples, are expected.

57. The project will include activities that proactively engage citizens in planning - consultations with multiple stakeholders, including GoI policymakers and officials from the MOE, AICTE, central agencies, potential beneficiary institutions, students, faculty, industry associations, private-sector employer groups, development partners, and subject-matter specialists active in the tertiary education sector. *A* feedback mechanism will be established through beneficiary surveys with project beneficiaries, i.e., employers as well as students and faculty. The surveys will be completed three times during the project life. It will obtain their opinion on a) the teaching and learning environment in colleges, including gender aspects, and b) receive feedback from employers about the effectiveness and efficiency of the project interventions. The findings will continue to inform the implementation of the project and the revision of the ongoing engagement and project implementation strategies as appropriate.

E. Implementation

Institutional and Implementation Arrangements

58. **The project will maintain and build on the existing institutional set-up in the technical education sector and draw from implementation arrangement experiences during the TEQIP series.** The MERITE is a Central Sector Scheme, so the Ministry of Education will fund 100 percent of the project costs (of which 50 percent will be provided via a World Bank loan). Overall responsibility will lie with the Department of Higher Education (DHE) of the MoE. The MoE will constitute a National Steering Committee assisted by the National Project Directorate headed by the National Project Director (Additional Secretary in charge of higher/technical education). The MoE will delegate day-to-day implementation to a sufficiently staffed Project Implementation Unit (PIU), which will undertake all implementation-related activities in accordance with the Project Implementation Plan (PIP), prepared by the MoE and agreed with the World Bank. The PIP will include detailed arrangements and procedures for all operational and technical aspects necessary for effective implementation of the project.

59. **The MoE will enter into MoUs with each of the select states. At the state level, State Departments of Technical Education will oversee and facilitate implementation in their institutions.** States will set up a State Steering Committee headed by the Principal Secretary/Secretary for Technical Education in the state and supported by state-level project implementation units, to be operated by and accountable to the national-level PIU. SPIUs will work closely with the State Department of Technical Education and SSC and provide regular updates to the Principal Secretary/Secretary Technical Education in the state.

60. **At the institutional level, each participating TEI will enter into an MoU with MoE or the respective state** (in accordance with the nature of the institution, i.e., central versus state-level). The Board of Governors (or equivalent) will be the body with overall accountability, while the principal and senior management will be responsible for institutional project design and day-to-day implementation at the institutional level. They will be supported by an Implementation Development Unit.

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