

Work in Progress: Not for Quotation

Subject: **Approach Paper for Project Performance Evaluation Report of Loan 1432-INO: Engineering Education Development Project**

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A. Background

1. The Government of Indonesia had recognized, through its development plans, that a strong competitive workforce is a precondition for sustainable national progress and that an increased share of higher education graduates, particularly engineering graduates in the labor force, is a key to rapid industrialization and increased competitiveness. In line with this, REPELITA VI, which spanned 1994/95 through 1998/99, included measures to increase long-term industrial growth by improving the relevance and quality of manpower training, encouraging businesses to shift from low-cost labor to higher skill intensive products, and improving and expanding training institutions. In this connection, the Government requested ADB to finance the Engineering Education Development Project¹ (the Project), with project preparatory technical assistance to help design the Project.² The Project was appraised from 4 to 22 September 1995, approved on 6 February 1996, and became effective on 7 May 1996. The loan was closed on 12 December 2002. The basic data of the Project are given in Appendix 1.

2. From 1994–1999, ADB's country operational strategy³ focused on the development of physical and social infrastructure and, in particular, human resource development that was perceived to be critical to sustain socio economic development. The basic thrust of the activities in the education sector was to consolidate achievements through quality improvements to increase internal and external efficiency and to redress imbalances between urban and rural areas, paying particular attention in ensuring access to educational opportunities for poor, more remote and marginalized sector of the population. ADB had supported the development of Indonesia's higher education system, since 1985 through eight projects,⁴ to provide the required professional manpower for the country's socioeconomic development. Except for Loan 0525-INO, which was not rated, and Loan 1013-INO, which was rated partly successful, the six remaining loans were all rated successful at project completion.

3. There was substantial demand for science and technology graduates, science and engineering teachers, engineering graduates and graduates with appropriate skills for different sectors while graduates of liberal arts and social science programs had low rates of

¹ Loan 1432-INO: *Engineering Education Development Project*, for \$102 million, approved on 06 February 1996.

² TA 2096-INO: *Engineering Education Development*, for \$800,000, approved on 7 June 1994.

³ ADB. 1994. *Indonesia: Country Operational Strategy*. December. Manila.

⁴ Loan 0244-INO: *Surabaya Institute of Technology*, for \$14.5 million, approved on 12 December 1975; Loan 0402-INO(SF): *University of Hassanudin*, for \$25 million, approved on 7 July 1979; Loan 0525-INO: *University of North Sumatra*, for \$26.0 million, approved on 25 September 1981; Loan 0737-INO: *University of Sriwijaya*, for \$27.9 million, approved on 21 May 1985; Loan 0894/0895(SF)-INO: *Marine Sciences Education*, for \$73.3 million, approved on 14 July 1988; Loan 1013-INO: *Six Universities Development and Rehabilitation*, for \$114 million, approved on 8 March 1990; and Loan 1253-INO: *Higher Education*, for \$140 million, approved on 21 September 1993.

employment. Thus, there was a need to improve regional/provincial engineering universities and polytechnic institutions to increase their ability to serve local needs through selective improvements of facilities, educational content and methodology, and staff. The improvement was to give students access to good regional engineering universities and save them the higher costs of education at major urban centers, and improved their suitability for locally available employment opportunities, thereby increasing their likelihood of remaining in their regions.

4. The engineering education system in Indonesia was afflicted with (i) lack of quality assurance in the engineering education; (ii) weak relevance of engineering education and quality of academic programs, which do not match the requirements of local labor market, resulting in low absorption of graduate in the markets; (iii) inadequate staff development and teacher qualification; (iv) inadequate instruction materials, laboratory equipment and facilities; and (v) inequitable access and participation as constrained by income and gender barriers, as well as geographic distribution of educational facilities.

5. The major concerns of the regional/provincial universities included (i) inappropriate orientation and ability of many universities to meet the requirement of local, regional and national socioeconomic development, (ii) low quality of graduates who do not have problem-solving and practical skills experience, (iii) regional/provincial disparities in access to education for talented rural youth and women and low internal efficiency, as reflected in low graduation rates and high drop-out and repetition rates.

6. The other outstanding issues were (i) insufficient interaction between universities and government and commercial agencies in the provinces; (ii) lack of sufficient qualified administrators to undertake educational planning, resource management and monitoring and evaluation for local, regional and national development in Directorate General of Higher Education (DGHE) and individual higher education institutions; (iii) inadequate government budget allocation and lack of appropriate policies on tuition fees and cost recovery from the beneficiaries; (iv) no clearly defined roles of public and private institutions; and (vi) lack of strategies and plans on the Government's role in supporting and regulating public and private universities to establish a unified system of engineering education.

B. Project Design and Implementation

7. The Project aimed to assist in improving the quality, relevance, and capacity of engineering education, while enhancing the access of economically disadvantaged but qualified students who wish to study engineering. The Project was composed of the following components (Appendix 2): (i) improving the quality and relevance of engineering and technician education, (ii) enhancing access and participation of economically disadvantaged but qualified students, and (iii) strengthening institutional capacity of engineering and technical education. These components were to be implemented through the provision of a variety of physical and human resource inputs, including (i) civil works (rehabilitation and new construction); (ii) equipment and materials (equipment for laboratories, library materials, furniture, and service equipment); (iii) staff development (overseas fellowships, short-term training, in-country fellowships, and training); (iv) specialist services and training input (project consultants, academic advisers, and technical specialists); and (v) special programs and research studies (program relevancy fund [PRF], student grant program or student financing assistance scheme [SFAS], cost recovery program, promoting private engineering education, tracer study for engineering graduate program and project benefit monitoring and evaluation program). The Project assisted seven public engineering universities and seven polytechnic institutions (Appendix 3).

8. The DGHE within the Ministry of National Education was the Executing Agency. A central project implementation unit (CPIU) was established to manage project implementation and was assisted by local project implementation units (LPIUs) that were created at each Project institution. A Project Steering Committee (PSC) was established to give policy guidance to the CPIU, oversee project implementation, and coordinate with other agencies.

9. The total project cost at appraisal was estimated at about \$176 million. ADB approved a loan of \$102 million to finance 58% of the total cost and the Government was to provide the remainder. At closing, the ADB loan had already been reduced to \$71.4 million.

C. Major Issues Raised during Loan Processing

10. **Management Review Meeting (MRM).** The MRM, held on 28 July 1995, recommended to the Mission to (i) reexamine the project's cost estimates and financing plan in the context of local cost financing, the hardware portion of the Project, and ADB's financing share; ii) examine the compatibility of equipment under ODA's tied credit with ADB funded equipment and, where ODA cofinancing was to materialize, reallocate or reduce the ADB loan by the corresponding amount; and (iii) review and strengthen the sustainability aspects of its special programs, i.e., the Student Financial Assistance Scheme (SFAS) and the Program Relevancy and Research Fund (PRF).

11. **Staff Review Committee (SRC) Meeting.** The SRC, which met on 21 November 1995, observed that the issues raised at the MRM had been appropriately addressed. The SRC concluded that (i) there was no major issue requiring a Loan and Technical Assistance Coordination Committee meeting; (ii) the Project would not impose a specific cost recovery target but would assist Government to achieve its own cost recovery objectives; (iii) the linkage between Project's investment in physical infrastructure and quality improvement in engineering education would be strengthened in the RRP; and (iv) the indicative amount of the potential ODA cofinancing would be included in the RRP, but not in the loan agreement.

12. **Board Discussion.** All members of the Board supported the Project. Concern expressed by Board members revolved around the following issues: (i) use of OCR funds to finance local costs; (ii) cost recovery, particularly when there is a greater chance of it in this subsector and it affects project sustainability; (iii) staff retention and maintenance and replacement of equipment as they affect project sustainability; (iv) quality assurance that includes inspection and rating functions to provide incentive for institutions to improve their standards, and ensuring that recommendations of the proposed Engineering Quality Assessment Committee were accepted and implemented by relevant authorities; (v) close coordination with and support from the industry for continued relevance of programs; (vi) subsidies in higher education vis-à-vis those in primary education; (vii) close monitoring to avoid implementation delays.

D. Major Findings of the Project Completion Report

13. The Project Completion Report (PCR) rated the overall Project as highly successful, based on its relevance, efficiency and efficacy, institutional development (including its long-term positive impact on the society and economy), and high likelihood of sustainability. The PCR indicated that despite the reduced loan amount, after loan cancellations, all project components and activities were successfully implemented. In addition, a new element of ICT was introduced later during implementation that added value to the Project.

14. The PCR indicated that the Project improved the relevance, quality, and capacity of engineering education in the country. Although project inputs were targeted mainly at the 14 selected universities/institutions, the quality and relevance of engineering education was affected system-wide. The Project made significant contributions to developing engineering education by (i) establishing a quality assurance framework, (ii) benchmarking engineering teaching and learning practices, (iii) overhauling curricula to meet the needs of the industry, (iv) developing effective institution-industry links, (v) fostering meaningful partnerships between public and private institutions, and (vi) creating networks among the engineering institutions to share experience and resources. DGHE was of the view that the Project has established a strong foundation for engineering education in the country, and its ability to produce higher quality engineers and technicians who will contribute to national competitiveness will demonstrate its long-term impact. The Project also developed 10 new engineering study programs and strengthened seven existing programs in seven project universities with modern laboratory facilities, computers, books, and instructional materials supported by well-qualified staff. Through the new and strengthened programs, 3,000 new student slots were created. The Project also upgraded 22 engineering diploma programs in seven polytechnics from 2- to 3-year programs to meet the higher qualification requirements of the industry. These universities and polytechnics are in areas of high market demand. Benefit monitoring and evaluation (BME) studies carried out by project institutions indicated quick absorption of their graduates by the labor market, most in less than six months after graduation.

15. The Project enhanced geographic equity and fostered social equity. Most project sites were in Eastern Indonesia and more than 27,000 students from poor families, including 1,300 women, received scholarships to study engineering in universities and polytechnics, including in institutions not assisted by the Project. These students were academically competent, but would not have been able to progress due to poverty. In the last year of project implementation, all rectors and deans of engineering faculties and directors of polytechnics participated in a series of discussions and workshops at DGHE to ensure project sustainability. A sustainability plan for each institution was developed out of these discussions. This was preceded by their visit to Australia and North America to study faculty management and planning, income generation, and resource management. The sustainability plan covered revenue generation and planned maintenance of academic assets and facilities. Project institutions also established a network to share best practices in the academic domain and in capacity building in financial management.

E. Issues to be Addressed by the Project Performance Evaluation Report

16. The Project Performance Evaluation Report (PPER) will evaluate the Project against the standard evaluation criteria of relevance, efficacy, efficiency, sustainability. The PPER will assess its institutional, socioeconomic and environmental impacts as well as performance of ADB and the Government. In addition, it will also try to confirm the PCR's findings and identify the reasons for success, lessons learned and other factors which made the project the only project rated highly successful among the 8 other higher education projects (para.2).

17. In the process of evaluation against the standard criteria, the PPER will address issues related to engineering education, some of which were raised at loan processing, including program relevance, employment of graduates, industry-university interaction, quality assurance, sustainability and cost recovery, and enrolment of women (see Appendix 4 for the evaluation matrix).

F. PPER Approach and Schedule

18. The PPER approach involves (i) desk review of relevant project documents/reports, (ii) consultations with concerned operation divisions and government agencies to solicit their views on key issues, (iii) field visits to some project universities/polytechnic institutions and focus group discussions with major stakeholder groups (MONE, DGHE, CPIU, LPIU, University Administrators, etc.), (iv) wrap-up meeting with major stakeholder groups, (v) field surveys of sample beneficiaries, (vi) analysis of nationwide secondary data, supplemented by primary data to be collected from field surveys whenever appropriate; (vii) update the project design and monitoring framework contained in the PCR as per Appendix 2; (viii) gather photographic evidence of evaluation findings; and (ix) evaluate the Project in accordance with the *Guidelines for the Preparation of PPERs*.

19. The OEM will be fielded from 20 July 2008 to 9 Aug 2008. The evaluation team will comprise (i) the OED team leader, (ii) a principal evaluation specialist; (iii) an operations evaluation assistant (headquarters-based for intermittent administrative, logistic support, and report finalization); (iv) two education specialist domestic consultants for 2 person-months and 1 person-month, respectively. The OEM will prepare structured and semi-structured questions for the key informant interviews and focus group discussions in consultation with the principal evaluation specialist and the two local consultants. The local consultants will form a local data team to do a survey and collect primary data in 10 public (project) universities from three groups of respondents (education administrators, teachers/professors, and students/alumni enrolled in S1, and D3 at the sampled universities). Two public (non-project) universities and two (non-project) polytechnic institutions will also be selected for comparison. Questionnaires are being designed for the three groups of respondents. These questionnaires will be transformed into the structured form and in Bahasa by the consultant and his/her team during the survey from June to July. Exact sample size and sample selection is still being discussed.

20. The terms of reference of the Mission Leader, Principal Evaluation Specialist and the two local consultants, together with their survey team, are in Appendix 5. Appendix 6 is the summary of projects inputs by component per University/Polytechnic Institutions as indicated in the RRP will serve as a guide during the survey since the planned courses to be created, enhanced or strengthened covered for each University/Polytechnic Institution varies.

21. The proposed schedule for the PPER is given below:

Field Surveys	IV Jun–III July 2008
OEM	III Jul 2008–I Aug
OED Internal Review	IV Aug 2008
Interdepartmental Draft	III Sept 2008
Draft to Editor	III Oct 2008
Submission for Approval	III Nov 2008