

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

Report No.: AB2860

Project Name	Nigeria Federal Science & Technical Education at Post-Basic Levels (STEPB)
Region	AFRICA
Sector	Tertiary education (40%); Secondary education (35%); Vocational training (25%)
Project ID	P074132
Borrower(s)	REPUBLIC OF NIGERIA
Implementing Agency	Federal Ministry of Education Abuja - Nigeria
Environment Category	<input type="checkbox"/> A <input checked="" type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> FI <input type="checkbox"/> TBD (to be determined)
Date PID Prepared	February 28, 2007
Date of Appraisal Authorization	March 2, 2007
Date of Board Approval	May 22, 2007

1. Country and Sector Background

This Project Appraisal Document (PAD) proposes financing for Science and Technology Education at the Post-Basic (STEPB) level in selected federal institutions in Nigeria. The project will support capacity enhancement in post-basic science and technology (S&T) education. Its design benefits from a lengthy and inclusive participatory process in which workshops, formal and informal stakeholder dialogues and a year's worth of analytic work preceded its formulation. However, this project represents a modest investment in comparison to the needs and size of Nigeria's entire post-basic education sub-sector, even for its S&T components. Also, since Nigeria's democratic government emerged in 1999 the post-basic education sub-sector has become more under pressure from increasing demand for better access and quality. There is also an overall consensus that Nigeria needs better middle- and higher-level S&T graduates to cater for its non-oil economic growth. For these reasons post-basic stakeholders in Nigeria opted for a project design that would provide 'merit-based catalytic funding' to pilot innovations that render the economic and social benefits in line with the Federal Government's NEEDS1 (poverty reduction strategy).

Federal and state elections are scheduled to take place in April 2007. However, the implementation of the project is not expected to be affected by the outcomes of the scheduled elections because the design of the project, which is uncontroversial, focuses mainly on improving science and technology post-basic education for economic growth. Ownership of the project is strong due to the participative manner in which the STEPB study and project preparation was approached.

Country context and macro-economic situation. Nigeria is a highly populous country (estimated around 140 million) with a decentralized government structure. There are 36 States and the Federal Capital Territory (FCT) and 774 local government areas (LGAs). Despite being the world's fourth largest exporter of oil and recent economic growth, it is one of the poorest countries in the world with per capita

¹ Nigeria Economic Empowerment Development Strategy (NEEDS) was discussed with the Bank. The World Bank's 'Country Partnership Strategy –CPS' supports the NEEDS and was approved by the Board in July 2005. The CPS is a partnership with DfID and is in the process of being updated. USAID has recently joined the partnership.

income of less than US\$500. There are over 300 different languages spoken in Nigeria. Hausa, Yoruba and Igbo are spoken by over 50 percent of the population and are the major national languages. Many less widespread languages are not written. English is the official language and is widely spoken. Approximately 55 percent of the total population is estimated to be poor (World Bank, forthcoming). With oil prices currently at historical levels, Nigeria's oil revenues are projected to grow from an annual average of about US\$15 billion between 2000 and 2003 to about US\$36 billion annually between 2005 and 2008. On the macroeconomic front, real GDP is projected to grow at about 7 percent on the basis of higher crude oil and gas production and non-oil GDP growth of about 5 percent. Nigeria's economy depends heavily on the oil sector, which contributes 95 percent of export revenues, 76 percent of government revenues, and about a third of gross domestic product (GDP). But following many years of neglect of the non-oil sectors, GNI per capita (2004) is only about US\$390 (Atlas method)², which is low even compared to the sub-Saharan Africa average of US\$600. It is important to note that Nigeria receives only US\$2 per capita in official development assistance compared to an Africa average of US\$28.

Key indicators in the Human Development sectors in Nigeria show mixed trends. Health and education indicators show slight improvements in some areas. Social protection indicators have not been tracked over time, but show high levels of vulnerability and low capacity among the poor to manage risk. There are distinct geographic differences in indicators with the North in general trailing the South and sharp differences between the poor and non-poor. In 2004 about 7 million children (20%) of the relevant age group (6-11 years) were not enrolled in primary schools. Girls continue to have less access than boys, with only 58% of girls attending (mainly primary) school, dropping to 20% in Northern Nigeria.

Nigeria's Education Sector. Nigeria's education system comprises 9 years of basic education (6 years of primary and 3 years of junior secondary), 3 years of senior secondary, and 4 years of tertiary education. The provision of education is the concurrent responsibility of the federal, state and local governments, with a fast growing private education sector active in all levels of the education system. Private providers of education (both formal and informal such as private religious schools) also exist at all levels and cater to a sizeable number of children. The Federal Government plays the dominant role in the provision of post secondary education, while state and local governments have principle responsibility for the provision of secondary and primary education. The Federal Government also provides additional direct funding for education at the state and local government levels through the Universal Basic Education Commission (UBEC) for the implementation of the universal basic education program, the Education Trust Fund (ETF), used mainly for physical infrastructure, and the Debt Relief Fund, for the achievement of the MDGs. At the Federal level the FGN maintains a system of federal Education Institutions: Universities, Polytechnics and Colleges of Education. The federal level also includes about 120 federal secondary schools. These federal institutions and schools are spread out among the States. Their aim includes the promotion of cultural and national cohesion and to serve as 'best practice examples' for the State institutions.

Financing of Nigeria's education. In 2001, it was estimated that the federal government expenditures accounted for about 20 percent of total education expenditures, while state and local governments accounted for approximately 80 percent, suggesting that state and local governments are the main financiers of education. Attempts have been made to analyze public expenditures; however, the information base is currently insufficient to support an analysis of the adequacy, patterns, distribution, and impact of public expenditures across all levels of education and all tiers of government. The few studies that have examined the financing of education in Nigeria suggest that public funding for education increased from about 2.8 to 6.2 percent of the Gross Domestic Product (GDP) spent between 1999 and

² According to the World Bank's World Development Indicators Database, Nigeria's GNI per capita increased from US\$260 to US\$390 between 2000 and 2004.

2002, as opposed to the SSA country average of 4.7 – 5 percent.³ As a share of total government expenditures, total education expenditures increased from 14.2% to 17.5%⁴. Most of these increases went to salaries. It is likely that overall public spending on education has further increased since 2002 because of additional available funds for the implementation of the UBE program and the MDG related activities financed by the debt relief initiative during the past year. Preliminary work has also indicated that the total cost for universal basic education covering grades 1-9 between 2005 and 2015 is likely to be about US\$30 billion equivalent (see World Bank, 2005).

Nigeria's education sector faces a wide array of cross-sectoral problems. Key issues, which cut across all levels of education are: (i) inequitable access to quality education (rural children and especially girls have less access to basic and secondary schooling than children from urban and relatively better-off families); (ii) inadequate quality and relevance of learning and teaching (although there are no in-depth data on quality and relevance available, Nigerian educators and public and private employers agree that it needs to be improved at all levels, based on international comparative standards and trends); (iii) inadequate management, planning and monitoring capacity (the capacity to develop strategic education sector plans and related annual implementation plans) is weak; and (iv) inefficiencies in funding and lack of targeted funding based on performance and strategic economic needs. While Nigeria is engaged in sector-wide reform efforts to achieve the Millennium Development Goals (MDGs) in education, it still faces significant challenges to provide more and better access and improve the quality and relevance of what students learn. Skills and knowledge in Science and Technology subjects are high on the priority agenda of the FGN since this plays an important role in poverty reduction and economic growth.

Access to learning opportunities. Investments in basic education have already led to a significant increase in coverage since the launch of the Universal Basic Education (UBE) program in 1999. Yet, Nigeria is significantly behind in its progress to achieve the UBE goals by 2015. Overall enrollment rates in basic and secondary are low, especially in the Northern Regions, where rates are particularly low for girls. Only 64 percent of school age boys attend primary school and only 57 percent of girls. There are large income and geographic differences in education outcomes, with the Northern regions consistently faring worse than the Southern ones. The cost of schooling, both the direct and the indirect opportunity costs, remain the key reason for low enrolment and for dropping out of school (World Bank, forthcoming). The poor quality and relevance of primary and secondary education also acts as a disincentive to access and completion, particularly for girls. For those children who have access, the quality of education is insufficient to provide relevant knowledge and skills to become productive citizens and lead a healthy life. This is particularly relevant for science, mathematics and technology education at the post-basic levels.

Main sector issues and Government strategy

The Science & Technology Post-Basic Education (STEPB) study, on which preparation of this project is based, provides an analysis of the constraints and issues related to improving the quality and appropriate quantity of science and technology (S&T) post-basic graduates from the federal system. The study was completed from September 2005 to October 2006. By using a participatory approach stakeholders developed strong ownership of the study. This produced realistic problem identification and proposals on how to implement best practices from an international perspective. Over 8 workshops were held and local research teams, composed of Nigerian experts from federal post-basic institutions, worked closely with international S&T expert consultants. The study first completed 6 technical background studies and

³ Estimates on Nigeria's total expenditures on education were partial and underestimated since most estimates do not include accurate and reliable data on expenditures by local governments, which are responsible for the funding of primary education.

⁴ Hinchliffe K (2002) Public Expenditures on Education in Nigeria: Issues, Estimates and Some implications, Africa Region Human Development Working Papers Series. World Bank. Washington, DC.

then produced a STEPB Synthesis report⁵. It addresses questions of policy and planning, teaching, learning and research, and whether graduates possess the relevant skills for the labor market and the expanding non-oil economy. The report also discusses preliminary findings in financing trends and expenditure patterns for the federal post-basic level. The scope of the STEPB study is limited to the federal post-basic education system in Nigeria.

The six technical background studies covered the following S&T areas: (1) policies and strategies in S&T innovation related to federal post-basic education and training, (2) financing and expenditure trends in federal post-basic education and training with a focus on S&T, (3) teaching and learning, curricula and assessment practices in S&T post-basic education and training at the federal level, (4) the impact of information and communication technologies on teaching and learning, e-learning and open learning arrangements, (5) labor and employment issues related to federal S&T post-basic education and training, and, (6) backbone connectivity readiness and the needs of selected federal universities.

Data collection and analysis at the federal Post-basic Education level. The STEPB study found that too little data monitoring and planning and too few effective management information systems exist at both the institutional and the system level. These shortcomings impede a thorough assessment of performance and quality. Data on enrolment, attrition, staff, cost and finance, and outputs (number of students, graduates, research outputs, etc) at the federal sector level are not readily available or collected and analyzed to allow examination of overall education expenditures by source of revenue, by function (administrative, instructional, research, etc); or by field (science and technology, social sciences, arts, etc). Major strategic choices require careful collection and analysis of additional data, focusing on enrolment, staff, costs and finance (both budgetary and non-budgetary), outputs and should cover both state and federally funded post-basic education institutions. However, participation of federal institutions' S&T experts made it possible to identify strengths and weaknesses in the federal post-basic institutions and provide recommendations for the way forward.

The results of the STEPB study showed that at the post-basic level in Nigeria, there is currently an overwhelming demand for more and better-quality education and training, especially in Science and Technology related areas (chemical technology, biogenetic, health, agricultural sciences, materials and mineral technologies, engineering & mechanics, processing and packaging products for exports, oil-industry technologies). The Nigeria universities and other tertiary institutions had an excellent reputation in the 1960s and 70s. This was lost during the 1980s and 90s. Rapid technological progress and the emergence of the knowledge society placed Nigeria's post-basic education at an even greater disadvantage. Military rule and rapid expansion without matching increases in funding led to a decline in quality and relevance of S&T teaching and learning at the Post-Basic levels, and hence of the graduates from the system. This plays at two levels: (a) first at the level of secondary schools and Colleges of S&T teacher training, which determines the basis for students to choose sciences and technology related subjects for further study and produce good-quality graduates for entry into the tertiary level or into the labor-market; and (b) second the quality and relevance of tertiary teaching and research should be determined by appropriate and adequate financing mechanisms, social and public-private partnerships, and maintaining self-regulating standards.

In most Nigerian post-basic institutions (for the S&T related study fields) the situation is aggravated by a serious lack of (i) equipment and adequate resources for ICT, (ii) inter-institutional communication and exchanges of results between research groups, (iii) resources for international contacts; (iv) insufficient entry-level of secondary school graduates from lower education and training levels who have modern and

⁵ Nigeria Science and Technology Education at Post-Basic Level (STEPB): *A review of S&T education in federally-funded institutions*; October 2006; Report No. 37973-NG, World Bank. Six technical background studies are available upon request and have been disseminated among S&T stakeholders in Nigeria. The study was co-financed by DfID through its CUBE project and by the Norwegian Post-basic Education Trust Fund.

relevant knowledge and skills; (v) qualified and experienced middle-level technicians and laboratory services which are required for effective and quality research ventures.

Government strategy. Nigeria has adopted a strategic vision for tertiary education with emphasis on S&T enrollment. Current education policies call for increased enrolment in science and technology areas / programs, improved research and technology infrastructure, and strong quality assurance mechanisms. The National University Commission is completing an accreditation exercise of all tertiary institutions, using international quality standards. Over sixty percent of student places for admission into tertiary institutions have been reserved for sciences and technology disciplines which are viewed as critical for national development. S&T students comprise about 52% of total tertiary enrollment and 34% of tertiary graduates (the majority of which in natural and social sciences).

The Federal Government maintains schools and institutions at the secondary and tertiary level. In almost all States there is a federal university and/or polytechnic. Currently the States are also requesting assistance from the FGN to develop tertiary education institutions at their State level. However, the federal post-basic system remains the most significant for supplying the country with qualified middle- and higher-level staff for S&T related economic growth areas. In Nigeria only about 35% of the age cohort is currently enrolled in Junior Secondary Education (JSE: a 3-year cycle) which includes compulsory Science and Mathematics programs. A proportion of the JSE graduates continues to senior secondary schools where they receive a traditional academic-based education or technical and vocational schools where job-oriented education is offered. The federal secondary schools represent about 8-10 percent of total secondary enrolment. The tables below provide an overview of the Nigeria Education system.

Educational Institutions by Ownership (2005)					
	Federal	State	LGA	Private	Total
Universities	26	24	0	23	73
Colleges of Education	22	41	0	9	72
Polytechnics	19	32	0	6	57
Mono-Technics	32	14	0	5	51
Secondary Schools	102	13,846	0	13,700	27,549
Primary Schools	0	NA	50,750	9,020	59,800

Enrolment in Educational Institutions by Ownership (2005)					
	Federal	State	LGA	Private	Total
Universities	384,200	n.a.	0	n.a.	384,200
Colleges of Education	114,500	n.a.	0	n.a.	114,500
Polytechnics	196,093	165,824	0	2,293	364,210
Mono-Technics	10,095	10,142	0	1,258	21,496
Secondary Schools	n.a.	5,422,611	0	974,970	6,397,581
Primary Schools	0	0	20.7 m	1,578,650	22.3 m

Nigeria has made a number of important advances in building up its S&T capacity. Concerned about the lack of coordination, the FGN has recently established a National S&T Coordinating Council chaired by the President to provide leadership in the development of S&T in the country. One element of the President's initiative is the Abuja Campus for the first Africa Institute for Science and Technology (AIST), the first of four such campuses in Africa. The AIST-Abuja campus is under development as part of the Abuja Technology Village initiative, for which the FGN will provide incentives to attract private investment. There is also a joint effort underway with UNESCO to develop a national strategy for science and technology. This initiative receives US\$ 2.6 million in funding (\$1.5 million from the FGN). In collaboration with the UNESCO-Abuja Office, the FGN also launched a project to strengthen S&T education in primary and secondary schools and teacher colleges in Nigeria. Through this initiative science kits are distributed to primary and secondary schools in Nigeria and assistance is provided to teachers colleges to strengthen pedagogy and methodologies for S&T teaching. This includes the

strengthening of local capacity to manufacture school-science equipment and consumables. However, funding for this initiative is limited and only a fraction of the total number of secondary schools is covered. The African Development Bank (AfDB) is co-financing a project (with US\$45 million equivalent Credit from the AfDB) that supports Secondary Education and Vocational Training as well as limited support to tertiary institutions. The Carnegie and MacArthur Foundations are active in supporting selected private universities in Nigeria through grant funding. The total Grant amount is about US\$3.5 million over 2 years. Coordination with the STEPB project preparation has facilitated an exchange of lessons learned by the foundations in the course of their support over the past 3 years.

Areas of weakness in the federal strategy for post-basic education institutions. Despite these worthwhile interventions the STEPB study shows that Nigeria is falling behind in terms of competitiveness internationally. The following main areas were identified as areas in need of strengthening: (a) poor coordination between S&T strategies and federal post-basic education policies and funding priorities; (b) overloaded, outdated and under-resourced S&T curricula and programs, which do not produce the graduated demanded by the labor market; (c) lack of a National Qualifications Accreditation Framework (NQAF) to cater for rapidly changing labor market demands, and allow private training institutions and individual workers to capitalize on their practical knowledge and professional skills and experience (formal, informal, public, private and community-based); (d) under-representation and underachievement of female students in science and technology programs (male students far outnumber female students in S&T programs at federal Colleges (81%), Polytechnics (60%) and Universities (73%)); (e) slow and uncoordinated development of ICT in post-basic education; (f) funding procedures are input-based, not related to performance and outputs, and provide little incentive for creativity and innovation, and do not encourage partnership with industry and the private sector; (g) the private sector plays only a very small part in funding post-basic S&T education and the majority of private university enrolment is in non-S&T programs; (h) available labor market information is insufficient to explain the apparent mismatch between supply and demand of S&T graduates; and (i) Nigeria's federal expenditure on S&T is too low to reap rewards other countries took when they invested significantly more in S&T development.

Research and development at post-basic education level in Nigeria. At current levels, the FGN financing for university and polytechnic research is too low to create the enticing research environment that draws industry partners into the mutually beneficial research and development arrangements that define the research landscape in, for example, the East-Asian knowledge economies and elsewhere in the developed world. Nigeria's private sector is making only sporadic contributions to the S&T system. Only a small proportion of companies engage in science and technology driven innovative activities. Consequently the need for guaranteed quality and timeliness in delivery of results imposes pressures on researchers beyond what they can realistically deliver. Most Nigerian scientific institutions (academic research institutes, universities, polytechnics, technical colleges, public research institutions) operate in isolation from each other and, more importantly, from domestic and foreign markets. Research is performed primarily in independent laboratories and institutes that frequently set priorities without regard to market demand, the technology upgrading and competitiveness needs of local enterprises, or even the Government's own scientific priorities. There are about 37 existing technology incubation centers (TIPs) of the FMST. These are designed to bring technologies to market. However, as yet they have limited experience due to perceptions of poor quality and/or irrelevance to industry needs. Decisions about what R&D to conduct at the federal universities and federal R&D agencies and institutes are often taken without regard for industry needs. The net effect is an R&D system that is an overhead expense rather than a resource for generating wealth.

Development of indigenous capacity in science and technology also desires more attention. Science provides the innovations that raise living standards and drive economic development and export growth. When local science communities can apply modern research to local challenges, they are better positioned to take significant steps toward addressing their countries' economic, agricultural, environmental, health, and social needs.

The project is consistent with the objectives and approach of the CPS that supports Nigeria's National Empowerment and Economic Development Strategy (NEEDS).⁶ The main objectives of the CPS are improved: (i) service delivery for human development; (ii) environment and services for non-oil growth; and (iii) transparency and accountability for better governance. Science and Technology is one of the priorities in the NEEDS to support and promote non-oil based economic growth in Nigeria. The main focus of the STEPB project is to assist the FGN in improving strengthening S&T education and research in the federal post-basic education sub-sector in selected institutions. This includes supporting emerging Centers of Excellence in S&T-based disciplines, and promoting and strengthening merit-based and sustainable financing mechanisms. Therefore this project fits into both the CPS and NEEDS strategies.

The STEPB study and other recent studies show that Nigeria is falling behind in terms of competitiveness internationally. Policies to expedite a shift toward greater knowledge-intensity extend beyond the domain of science and technology. The World Bank's Knowledge for Development (K4D) program recommends the development of appropriate policies, institutions, investments, and coordination across functional areas:

- ☞ An economic and institutional regime that provides incentives for the efficient use of existing and new knowledge and the flourishing of entrepreneurship;
- ☞ An educated and skilled population that can create, share, and use knowledge well;
- ☞ A dynamic information infrastructure that can facilitate the effective communication, dissemination, and processing of information.

2. Project Development Objectives

The Project's Development Objective (PDO) is for Nigerian federal post-basic education and research sub-sector to produce more and better qualified Science & Technology graduates, and higher quality and more relevant research.

Increases in amounts of human resources trained would be measured by increases in numbers of programs, enrollment, and graduates in science and technology, and labor market utilization of these skills. *Improvements in quality* would be measured through user surveys, in independent review panels, growth in total number of publications, and increased collaboration with regional and international research public and private partners. *Improvements in teaching and learning of S&T* can be measured by assessments of knowledge and skills. These assessment tools for S&T would be developed during the first three years of the project life and then be applied to establish a baseline at the senior secondary and tertiary levels. *Improved relevance would be indicated* by increased labor market utilization of S&T skills, greater institutional awareness and understanding of science, and greater use of technology-related skills to improve labor market products and services in areas of public concern (i.e. education, health, agriculture, management services, infrastructure, energy, etc.).

If the STEPB project is successful it will also build capacity within the participating federal Post-Basic Education Institutions (PBEIs) to manage, monitor and evaluate merit-based S&T funding according to international best practices. The project would be a first phase (of a longer-term program) of making it possible for Nigeria to produce an increasing percentage of Bachelors, Masters, and Ph.Ds in S&T areas

⁶ Under the CPS (document no.: 32412-NG) the Bank and DFID and other development partners will work with the FGN in fewer states that show commitment to economic reforms, poverty reduction and good governance. The development of Science and Technology in post-basic education is stated as one of the goals for development and improvement of Nigeria's education sector.

with relevant skills and qualifications according to international standards. This will promote increased public and private sector absorption of both people and knowledge, creating greater competitiveness and new areas of comparative advantage.

The lending instrument for the STEPB project is a specific investment loan (SIL). The SIL is appropriate because this is the first project of its kind in Nigeria; and the implementing federal post-basic institutions and the Federal Ministry of Education do not have experience implementing competitive funds for the development of S&T capacity. The project implementation period will be 4 years. Supervision of the SIL will provide greater guidance and technical assistance than would be the case if the goals of this project were to be pursued under budget support. This is consistent with the FGN's stated desire and Bank practice of having budget support be the main form of assistance, with projects only in areas bearing on productivity enhancement. It is also consistent with the Strategic Framework for Investment in Africa, which identifies investment lending as appropriate for investment in areas in sectors without an established track record.

3. Rationale for Bank Involvement

In the area of human development, the CPS proposes to work on strengthening progress on key MDGs and creating a basis for sustainable development. This is further operationalized in the education focused objectives of the Africa Action Plan (AAP). The Bank has a strong history of involvement in the sector and was selected under the current CPS to be the lead agency in education, working closely with other development partners to support state-specific EFA programs. The Bank is also providing (a) institutional capacity strengthening at all levels to improve management, planning, and monitoring capacity of quality and effectiveness in the education sector; (b) sector policy reforms/options; (through economic and sector work such as science and technology education in post-basic; education expenditure analysis and poverty assessments); and (c) support to the Government in promoting the knowledge economy through the proposed science and technology education in post-basic education project to further Nigeria's role in African science and technological progress for economic growth.

Much has been learned from the Bank's experience with the Second Primary Education Project (PEP2) which closed in December 2004 and the Universal Basic Education Project⁷ (UBEP), which closed in June 2006. Both were implemented at the federal level and provided funds for both federal and state level activities. The PEP2 was problematic during the initial project period as a result of difficulties with implementation given that the project objectives were too ambitious, the design structure was too complex and the political transition from a military to a democratic government affected management and supervision. After restructuring with a focus on self-help projects (demand driven, community focused infrastructure program), the implementation performance of PEP2 improved significantly. Despite the success of self-help projects in involving the community and in improving physical facilities – many have not been maintained and repaired in over a decade- the quality of physical infrastructure is often considered low and unit costs appear to be high. On the other hand, despite some implementation performance during the last of year of its implementation, the UBEP, which allocated a fixed amount of funding to the 16 participating States and the Federal Government, had been rated unsuccessful throughout its implementation. At the request of the Government, a portion of the undisbursed credit amount was cancelled and the project closed in June 2006. The main reasons for the unsatisfactory performance and subsequent cancellation were related to (a) faulty project design -- which allocated a small fixed amount of funding to each state irrespective of population, needs, state requirements, capacity, etc; (b) too ambitious, too complex but no detailed project implementation plan); (c) weak implementation capacity at all levels; and (d) ineffective performance of technical assistance provided by

⁷ The IDA Credit was approved by the Board in September 2002; signed in May 2003, and became effective on November 10th, 2003. The original credit amount was SDR 76.3 million (US\$101 million equivalent), of which about 59 percent had been disbursed by the time the project was closed on June 30, 2006.

the DFID-financed technical assistance Capacity for Universal Basic Education project (CUBE), which was not adequately aligned, from the design stage, to the implementation of the UBE Project. Funds were therefore limited and scattered among states and could not support deeper development investments.

Partnership and Donor Support. The development partners for Nigeria's education sector include DFID, USAID, African Development Bank (ADB), JICA, UNICEF, and UNESCO. The Bank is seen as an important partner for the Government in the education sector, with DFID as the other main donor partner. DFID, through its CUBE project, will support States with the implementation of their ESPs, to strengthen capacity, re-engineer systems and make more effective use of their own resources to enhance access, quality and equity in basic education. USAID is in the process of revising its country assistance and has expressed interest in collaborating with the Bank in support of the project. JICA and the Islamic Development Bank (IDB) have both expressed interest in collaborating with the Bank in Kaduna State. UNICEF is working in all 36 states, with particular focus on girls' education in the Northern states, as is also interested in collaborating on teacher development, improving school effectiveness and reform of the inspectorates. At present, there is no donor pooled funds mechanism in the education sector. It is expected that during 2007, other development partners may join the program and realign their existing project activities behind State ESP priorities, engage in stronger dialogue at key stages in the budget cycle, and join a common monitoring and evaluation (M&E) arrangement, including joint annual reviews.

4. Description

The proposed STEPB project design benefits from a lengthy and inclusive participatory process with formal and informal stakeholder groups and a year's worth of analytic work. The proposed STEPB Project has three components.

Component 1: Competitive Fund for Quality Enhancement and Innovation and Quality Improvement (US\$82 million; 45% of total Credit). Component 1 supports a facility to provide peer-reviewed and competitively-awarded quality improvement grants to federal Post-Basic Education S&T Institutions (PBEIs). Fundamental to the orientation of Component 1 is the peer-reviewed process through which funds are allocated. Competitive allocation of resources based on transparent criteria for quality, relevance, and impact represents an important culture shift and innovation in federal post-basic education in Nigeria. Component 1 will consist of two sub-components:

Sub-component A (US\$55 million; 31% of total Credit) provides competitive grants for improving access to basic and applied research (in collaboration with industry) in S&T to improve quality and relevance to local and national S&T needs. It will provide grants financing through three windows:

- A. Institutional grants of up to US\$250,000 to support S&T research and capacity building within individual STEPB institutions. (18% of total Credit; US\$33 m)
- B. Partnership grants up to US\$800,000 to support partnerships between two or more STEPB institutions (groups) and industry. (10% of total credit; US\$18 m)
- C. Innovator grants of up to US\$20,000 to individual S&T graduates (Bachelor, Masters and PhD) in their final year to encourage "Nigerian innovators of tomorrow". (2% of total credit; US\$4 m)

Sub-component B (US\$27 million; 15% of total Credit) provides competitive grants for improving S&T teaching and learning development to raise quality and relevance, efficiency and equity within participating PBEIs. Sub-component B will support mechanisms that promote greater access to S&T programs at tertiary level, particularly for women. Eligible institutions will be any federal post-basic S&T training institution in the country (federal Polytechnics, Colleges of Education, Colleges of S&T, and federal Universities). Proposals that also aim to improve S&T learning and teaching at the secondary level (by working with local secondary schools) will be encouraged.

The maximum period over which grants will be awarded is three years, based upon the request submitted within a selected proposal and the timing of submission (in the context of the project life).

Component 2: Support for the emergence of Centers of Excellence in post-basic S&T. (US\$54 million; 30% of total Credit). The objective of component two is to inject a small number (6-8 over the life of the project) of promising STEPB institutions with the resources necessary for them to emerge into Centers of Excellence, raising the national competence of Nigeria in the specific S&T area addressed by the CoEx and increasing the economic benefits derived from it. This component will support the development of Centers of Excellence in S&T in selected tertiary education institutions. The proposals that are submitted will be peer reviewed by panels of distinguished S&T experts from Nigeria and abroad scientists. Grants to 7-10 emerging Centers of Excellence will be made a maximum amount of up to US\$7 million per selected proposal through a competitive selection process.

Selection criteria for funding eligibility of emerging Centers of Excellence would include at least the following criteria: (1) their potential for conducting world class scientific research and technology development; (2) capacity and willingness to form effective partnerships with international S&T research institutions from abroad and support this in the proposal; (3) the relevance of its research area to Nigerian industry and economic development; (4) potential for teaching graduates and researchers in the specialty S&T areas; (5) potential for and interest in conducting multidisciplinary research; and (6) potential for outreach activities to other public and private institutions in Nigeria. Based on the peer review by the SIAB and economic growth considerations the Technical Review Committee will then select the recipients. Examples of funding activities and items are: (a) purchase of new, modern laboratory equipment; (b) light rehabilitation of essential laboratories; (c) ICT and library media and related equipment; (d) training of staff for capacity building and management (technical middle- and higher level staff and technicians); (e) workshops, conferences, study tours; (f) research stipends; (g) cooperative institutional agreements with international leaders in the S&T field of the CoEx.

Component 3: Strengthening strategic planning, management, and M&E in post-basic S&T education. (US\$27 million; 15% of total Credit) Component 3 will support complementary initiatives that aim to have a sub-sector-wide impact on quality, relevance, and access to federal S&T education at the post-basic level and project implementation and management. Component 3 will consist of two sub-components.

Sub-component A: sub-sector-wide improvements of quality, relevance and access to S&T education at federal post-basic education level (US\$18 million; 10% of totals base costs). This can be support for the development and implementation of S&T policy and planning initiatives as well as sub-sector-wide institutional strengthening activities that address identified systemic shortcomings. These activities will provide opportunities scale-up innovative developments of national significance in post-basic S&T education. Proposals will peer reviewed. Eligible institutions for support under Component 3 are STEPB institutions, including FME or FMST agencies and other institutions.

Examples of activities to be financed include: (a) developing ICT connectivity in STEPB institutions at the secondary and tertiary level or initiating the development of a nationwide network of e-learning centers shared between institutions; (b) S&T focused programs to raise awareness and attract interest in S&T among secondary school students and bringing federal secondary schools into partnership with PBEIs; (c) development and startup of a National Qualifications Framework for S&T related activities with stakeholders and social partners; (d) developing sustainable activities to address current information gaps in S&T such as capacity development for data gathering related to R&D and innovation; and (e) piloting by one or more of the PBEIs of a Labor Market Observatory to undertake measure the relevance of STEPB graduate output; and (f) organizing and implementing national awareness campaigns on S&T relevant topics.

Sub-component B: support for project implementation, management, and M&E (US\$9 million; 5% of total base costs). This includes continuous monitoring the project's progress toward its development

objective, monitoring and analyzing project performance indicators, and measuring overall progress in the federal post-basic education S&T sub-sector. To help improve data collection and analysis, this component will also finance specific studies, data collection and analysis.

Table 1: STEPB Project Component Description			
Component	Sub-Component description	Funding Categories	Major eligibility considerations
Component 1 Quality enhancement and innovation fund (QEIF) in STEPB <i>45%, US\$ 82 million</i>	Sub-component 1A Competitive awards for research and technology development <i>30%, US\$ 55 million</i>	Window A Institutional awards up to US\$ 250,000, <i>19% US\$ 33 million</i> (about 140 sub-projects)	Individual PBEIs can submit a subsequent application if implementation of the earlier sub-project is evaluated to be satisfactory.
		Window B Partnership awards up to US\$ 800,000, <i>10% US\$ 18 million</i> (about 22 sub-project)	Partnerships amongst PBEIs and/or with industry. PBEIs can submit a subsequent application if implementation of earlier sub-project is evaluated to be satisfactory.
		Window C (2) “Innovators of Tomorrow” awards up to US\$ 10,000 <i>2% US\$ 4 million</i> (about 360 sub-projects)	Students in their final year of study in a federal PBEI, graduating with a bachelors, masters or doctoral degree in a S&T area.
	Sub-component 1B Competitive awards for STEPB teaching and learning in PBEIs <i>15%, US\$ 27 million</i>	Awards up to US\$ 3 million, (about 9-12 sub-projects)	Applications can come from individual or groups of PBEIs.
Component 2 Supporting the emergence of centers of excellence <i>30%, US\$ 54 million</i>	Competitive awards for emerging Centers of Excellence	Awards of up to US\$ 7 million (about 7-9 CoEs)	PBEIs can apply to get support to become Centers of Excellence in a S&T area. Applicants will be required to establish (or have established) links with internationally recognized institutions in their specific S&T area.
Component 3 Supporting sector-wide initiatives <i>15%, US\$ 27 million</i>	Sub-component 3A <i>10%, US\$ 18 million</i> Supporting national policy and planning and institutional strengthening	Ceilings for funding proposals will be determined by the TRC.	Proposals by federal agencies will be eligible as part of agencies’ annual implementation plans (e.g. NUC, NBTE, NCCE, STAN, MAN, NITDA, NASENI etc).
	Sub-component 3B <i>5%, US\$ 9 million</i> Supporting STEPB project management and administration		The National Project Secretariat will prepare and propose a project annual implantation plan that will be submitted to the National Project Steering Committee
Unallocated <i>10%, US\$ 18 million</i>			

5. Financing

Source:
BORROWER/RECIPIENT

(\$m.)
20

International Development Association (IDA)

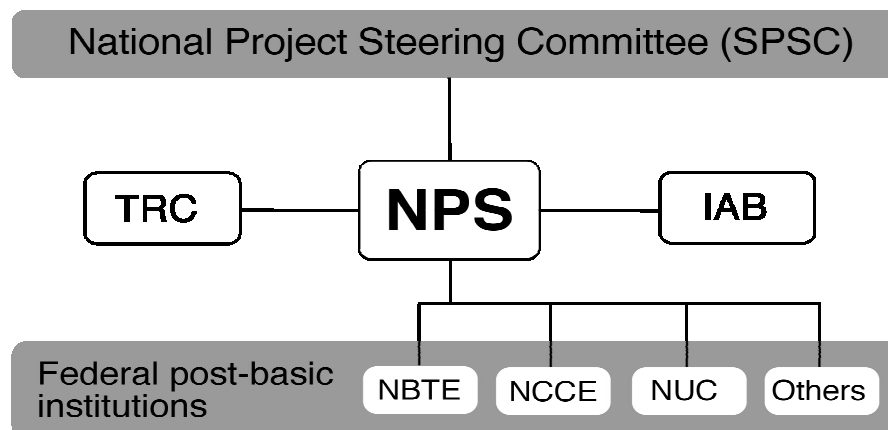
180
Total 200

6. Implementation

The FME is the main STEPB project implementing agency in close collaboration with the FMST. The FME will have the overall responsibility for project coordination and implementation. The S&T faculties and departments in the federal Universities, Polytechnics, Colleges, and the federal institutions that support S&T activities at the post-basic level (NUC, NBTE, NCCE, existing / emerging S&T Centers of Excellence) will implement sub-projects within their own local environment under responsibility of the Project Secretariat of the FME. The project implementation documents contain the required preparation and implementation conditions and specify in detail the requirements for effective and transparent implementation and disbursement. Four documents provide detail regarding the implementation arrangements of the STEPB project: (1) the Project Implementation Manual (PIM), (2) the Sub-Project Preparation Guidelines (SPPG), (3) the Procurement Manual, and (4) the Financial Management Manual. At Appraisal all manuals will be submitted to IDA for review and comments. At negotiations all project manuals will be finalized and approved by the FGn (relevant federal Ministries) and IDA.

The STEPB project website for greater transparency and easy access to information and data. The Project Secretariat, under responsibility of the Project Coordinator, will maintain a STEPOB website where all documents and information, including the Annual Project Implementation Plans, then project manuals, details of the sub-project and other funding review processes and the project performance indicator framework will be published and made available to all S&T stakeholders and IDA. All project reports and accounts will be published on the STEPB website to enhance and ensure transparency and increase stakeholder ownership of the project implementation results. All subprojects submitted for funding will also be made available (including the comments and suggestions for approval from the review process). The PS will contract a professional webmaster for the establishment and maintenance of the STEPB website. The website will be established to the satisfaction of IDA before project effectiveness will be declared.

A light administrative structure – the STEPB Project Secretariat (SPS) will administer the STEPB Project and manage related outreach and policy activities under the guidance of a Project Steering Committee (SPSC). The organogram below depicts the three layers of management and administration of the STEPB Project, each with explicit roles and responsibilities detailed below.



The STEPB Project Steering Committee (NPS) is the main policy decision making body for the STEPB Project. The function of the SPSC is to provide policy guidance during implementation of the STEPB

Project and to facilitate coordination between the different federal ministries and their affiliated institutions (e.g., NUC, NBT, NCCE, etc.). The SPSC will hold meetings twice per calendar year and will disseminate the “minutes” of its meetings to the PS and other key stakeholders of the STEPB project.

The STEPB Technical Review Committee (TRC) shall be responsible for reviewing all sub-project proposals submitted for support under the STEPB project (Components 1, 2 and 3). This includes proposals submitted by stakeholder institutions/organizations as well as those initiated by the SPS under component 3. Once appointed, the TRC will be maintained for entire period of the STEPB project. The TRC will consist of 7-10 science and technology experts who have recognized international stature. A maximum of five of these will be Nigerian nationals. Three to five will be international experts based outside Nigeria.

The STEPB International Advisory Board will assist the TRC in its sub-project proposal evaluation process. All submissions under Component 2 (support towards emergence of Centers of Excellence) will first be reviewed by the SIAB which will submit its recommendation to the TRC for final review. The review by SIAB will focus on whether the proposed interventions will ultimately result in a center of excellence of international standing and where necessary, suggest how the proposal could be improved. At its discretion, the TRC may also request members of the SIAB to review select proposals submitted under components 1 and 3. The SIAB will comprise 7-10 distinguished international science and technology experts.

The STEPB Project Secretariat will be responsible for day-to-day implementation of the project. The STEPB Project Coordinator will be the head of the Project Secretariat. The Project Coordinator will facilitate and coordinate the work of the STEPB Project Steering Committee, the Technical Review Committee and the International Advisory Board. S/he will serve as Secretary and member of the STEPB Steering Committee. The project Coordinator is also responsible for monitoring and evaluation of the project activities, disbursement monitoring, maintenance and updating of the STEPB website, and submission of audit reports to IDA.

For each institution that successfully receives funds through the STEPB Project a functioning STEPB Sub-project Implementation Unit (SSIU) will be established at the institution. In the case of a network of institutions, the SSIU will be hosted by the designated Lead Institution. The SSIU will be comprised mainly of staff seconded by the implementing institution.

To foster excellence in sub-project proposals, once per year, a workshop series will be held to strengthen the capability of scientists, researchers, entrepreneurs, and their partners’ to write compelling, clear, and fundable research proposals. This workshop will provide technical assistance to a diverse range of stakeholders in the Nigerian STEPB community seeking STEPB support. International practice in how to write competitive proposals will be demonstrated through hands-on workshops designed to challenge participants to refine and sharpen their grant writing.

7. Sustainability

The FGN and the S&T post-basic institutions are committed to improved effectiveness, quality and of Science and Technology in Nigeria. The FGN is also committed to achieve the MDGs and universal basic education. This requires better and more middle and higher level cadre (teachers, technicians, engineers, managers, ICT specialists). The FGN is in the process of completing its overall Science and Technology strategy in cooperation with the World Bank, UNESCO (Abuja Office) and other development partners. The NEEDS defines S&T as one of the priority areas for non-oil economic growth. There is strong ownership and motivation in all layers of the government and among the academic institutions to support this project and to build upon it.

The findings of institutional and social assessment showed there is a strong demand for quality S&T post-basic education in Nigeria. Users are willing to pay, provided that good quality and efficiency of services

is guaranteed. The post-basic institutions have a stake in the STEPB preparation and have demonstrated their willingness to invest their own resources in activities that are financed under this project. Post-project sustainability will depend on sufficient allocations from the FGN and post-basic institutions.

The project will strengthen the capacity of the FME and its federal post-basic S&T institutions for management, planning, and monitoring for more effective service delivery and accountability to their stakeholders.

8. Lessons Learned from Past Operations in the Country/Sector

The STEPB project design takes into account lessons from previous education projects in Nigeria as well as those with similar objectives elsewhere in the region. In addition, the project design benefited from the previous (World Bank, 2002; NUSIP) and ongoing analytical and project preparation work in the areas of education expenditures, teacher education, institutional assessment, EMIS, etc).

Realistic assessment of institutional capacity and level of readiness before project effectiveness will increase the chances for success. The project will address the prioritized needs as identified in the STEPB Summary study report.

Participation by stakeholders and strong ownership of the project design and its implementation arrangements are keys for a successful and timely implementation. The extensive consultation process for the STEPB included over eight workshops with the universities, polytechnics and Colleges, field visits by the preparation team, the creation of a Steering Committee, and coordination with the federal Ministries. The FME is responsible for implementation and has established an implementation team already. Participation by post-basic sub-sector S&T institutions in all steps of project preparation has created strong ownership and in-depth understanding of how the project is expected to work among the applicants for funding and beneficiaries. The STEPB project website which will include all information, documents and the management structure of the project will further guarantee transparency and continued participation by stakeholder groups.

Based on the implementation experience under the Universal basic Education project (UBE project) the allocation of funds needs to remain competitive and merit-based. The STEPB project funds for financing sub-projects and proposals for emerging Centers of Excellence will be allocated based on clearly identified performance indicators, and progress will be monitored.

Effective and efficient project delivery requires a jointly agreed results-based M&E system, including well-defined and measurable performance indicators, to be used effectively as a tool for monitoring progress during implementation. The STEPB project supervision will be based on jointly agreed performance indicators. Supervision missions will be carried out in partnership with the FGN. The STEPB Steering Committee will be able to monitor political and management ownership at the higher level of government. Involvement of the major S&T stakeholders will ensure that major project implementation problems will be addressed in a timely manner (on an annual basis).

Project effectiveness is considerably enhanced when technical assistance is available, especially in the areas of project implementation, procurement, financial management and monitoring and evaluation, given the weak implementation capacity. The requirements for technical assistance and the participation of international experts in the review of proposals and sub-projects that will be financed, are incorporated in the project design and the structure of the review and implementation processes.

9. 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)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Pest Management (OP 4.09)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Physical Cultural Resources (OP/BP 4.11)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Involuntary Resettlement (OP/BP 4.12)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Indigenous Peoples (OP/BP 4.10)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Forests (OP/BP 4.36)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Safety of Dams (OP/BP 4.37)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Projects in Disputed Areas (OP/BP 7.60)*	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Projects on International Waterways (OP/BP 7.50)	<input type="checkbox"/>	<input checked="" type="checkbox"/>

10. List of Factual Technical Documents

- Nigeria STEPB 5 Thematic Studies:
 - Review of policies in science, technology and innovation in the Science and Technology Post-Basic Education Sub-
 - Financing trends and expenditure patterns in Nigerian Post-Basic Education: A Focus on Science & Technology
 - Teaching and learning, curricula and assessment practices
 - E-learning
 - Labour Market Responsiveness in Nigeria - A study of the supply and demand for S&T graduates
 - Improving E-Readiness of Nigerian Higher Education Institutions
- Nigeria STEPB Synthesis Report
- Building Science and Technology Competencies for the Labor Market: A survey of Graduate Perspectives
 - Official Project Documents
 - Nigeria STEPB Project: Aide-Memoire of the preparation mission - *July 2006*
 - Nigeria STEPB Project: Aide-Memoire of the pre-appraisal mission - *December 2006*
 - Quality Assurance
 - Nigeria STEPB Project: documents for the QER - *January 2007*
 - Nigeria STEPB Project: draft QER report - *January 2007*
 - Nigeria STEPB Project: Team comments to the draft QER report - *January 2007*

11. Contact point

Contact: Jacob H. Bregman

Title: Lead Education Specialist, AFTH3 - Africa Region

* By supporting the proposed project, the Bank does not intend to prejudice the final determination of the parties' claims on the disputed areas

Tel: (202) 473-2457
Fax: (202) 473-8107
Email: Jbregman@worldbank.org

12. For more information contact:

The InfoShop
The World Bank
1818 H Street, NW
Washington, D.C. 20433
Telephone: (202) 458-4500
Fax: (202) 522-1500
Email: pic@worldbank.org
Web: <http://www.worldbank.org/infoshop>