



# **ISLAMIC DEVELOPMENT BANK**

## **IDB 1440 VISION Quick Win Programs**

# **GENERAL ROADMAP FOR ACHIEVING EXCELLENCE IN SCIENCE AND TECHNOLOGY HIGHER EDUCATION<sup>1</sup>**

(September 2009)

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## TABLE OF CONTENTS

### ACRONYMS AND ABREVIATIONS

### EXECUTIVE SUMMARY

- I. INTRODUCTION.
- II. BACKGROUND
- III. METHODOLOGY AND SELECTION PROCESS
  
- IV. TRENDS AND TOOLS
- V. INITIAL FOCUS FOR THE ROADMAP
- VI. PROPOSED PROGRAM FOR THE KNOWLEDGE SHARING WORKSHOP

- 2 background documents.

- Wagdy A. Sawahel "Higher education and science & technology in IDB member countries....Present development and future prospects"

[http://www.educationdev.net/educationdev/Docs/IDB\\_education\\_report\\_final\\_3.pdf](http://www.educationdev.net/educationdev/Docs/IDB_education_report_final_3.pdf)

- Abderrazzak Sersouri "Strategic Science and Technology fields in IDB member countries"

[http://www.educationdev.net/educationdev/Docs/Strategic\\_S&T\\_fields.PDF](http://www.educationdev.net/educationdev/Docs/Strategic_S&T_fields.PDF)

## ACRONYMS AND ABBREVIATIONS

IDB	Islamic Development Bank
S & T	Science and technology
TORs	Term of references
US	United States
OIC	Organization of Islamic Conference
R & D	Research and Development
QWP	Quick Win Project
ICT	Information and communication technology
QAS	Quality Assurance System
SESRTCIC	Statistical, Economic and Social Research and Training Centre for Islamic Countries
COMSTECH	OIC Standing Committee on Scientific and Technological Cooperation
UNESCO	United Nations Educational, scientific and cultural organization
ASTF	Arab science and technology foundation
NEPAD	The new partnership for Africa's development
IAS	Islamic world academy of sciences
ISESCO	Islamic Educational, Scientific and Cultural Organization

## **EXECUTIVE SUMMARY**

The combined context of globalization, competitiveness, and knowledge culture of the world today and tomorrow, imposes to the Ummah to develop high quality of education at all levels and more specifically higher education as a driving force for building up a knowledge society in the Muslim community.

This Quick-Win program of the Islamic Development Bank (IDB) will address "Achieving Excellence in Science and Technology Higher Education" with the following outputs:

- \* To provide a reference document for education leaders and decision makers and professionals in education.
- \* To network top-class institutions of learning of the Ummah by establishing collaborative relations between them and to link them with centers of excellence outside the Ummah.
- \* To pave the way for the full implementation overall Academic Excellence objective.

In line with this overall objective a selection process criteria has been developed for the identification of 15 candidate institutions as well as 6 scientific priority fields in the three IDB Regions. An Initial roadmap was drafted, including the trends and tools in S&T as well as a development framework. A knowledge sharing workshop gathering the key actors will be organized for the finalization of:

- (i) a validated general roadmap for achieving academic excellence in science and technology;
- (ii) three (3) customized roadmaps in the three selected fields; and
- (iii) an action plan for the implementation of the customized roadmaps in three selected sectors.

### **I. INTRODUCTION.**

1. The objective of this report is to lay the ground foundation for the Knowledge sharing workshop on "Achieving Excellence in Science and Technology Higher Education". The report focuses on the following:

- (a) Preparing a map indicating the ranking of the higher learning institutions in IDB member countries at the international and regional level;
- (b) Suggesting criteria for choosing educational institutions from IDB member countries to participate in the upgrading programme;
- (c) Identifying in each of the three IDB regions, S&T areas that IDB could support, and which are highly critical to the economic development of member countries with a potential regional impact;
- (d) Suggesting leading educational institutions in science and technology areas that will participate in the pilot programme and will benefit from the experience of world-class institutions;
- (e) Develop the TORs for the Knowledge sharing workshop.

2. This report is an indicative roadmap to be finalized during the Knowledge Sharing Workshop with an objective of developing sound models of excellence in S&T Higher Education based on experiences learned from world-class institutions mainly on

organizational setting, management system, work organization, leadership, resources mobilization and management, human resources development, monitoring and evaluation, linkages with the private sector. The Pilot Projects in S&T Higher Education will only be developed once the Roadmap(s) is completed and cleared by the IDB Management.

## II. BACKGROUND

3. Education in general and higher education in particular is the driving force for building a knowledge society through the development of scientific human resources, impart appropriate technological skills, knowledge and attitudes as well as forming the basis for developing innovation.

4. Despite the fact that the Muslim world is blessed with enormous natural resources and the quest for knowledge is a pillar of the Islamic Faith, the higher education in the member countries of Islamic Development Bank (IDB) is faced with great challenges such as lack of financing, staff development, skill-based training, quality of teaching and scarcity of research fund. Also, many developing countries members of the IDB are unfortunately lagging behind industrialized nations in education in general and tertiary education and in science & technology (S&T) in particular.

5. As a result, the 57 predominantly Muslim countries that have about 23% of the world's total population have less than 1% of its scientists who generate less than 5% of its science and make barely 0.1 % of the world's original research discoveries each year. The Islamic countries have a negligible percentage of patent registrations in US, Europe and Japan. Even more serious is the fact that the Research and Development manpower of Muslim countries is only 1.18% of the total science and technology manpower<sup>2</sup>.

6. To help reverse that situation, the 3rd Extraordinary Session of the OIC Summit (Makkah; December 2005) addressed very seriously the areas of Education, Science and Technology particularly the "low level of contributions towards S&T, specially in the area of R&D; the weak quality education and other flaws in the education system, and the failure to generate creative and innovative ideas". To this effect, the following recommendations were issued:

- (i) increase budgetary allocations substantially to provide quality education and enhance R&D;
- (ii) encourage private sector to contribute to R&D;
- (iii) establish a consortium for higher education to promote scientific research;
- (iv) enhance exchanges of technologies among OIC countries;
- (v) encourage creative, innovative and critical thinking within the education system;
- (vi) review the performance of OIC affiliated universities so as to improve their effectiveness and efficiency; and
- (vii) urge the IDB to further enhance its program of scholarships for outstanding students and hi-tech specializations...

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<sup>2</sup> Higher education and S&T in IDB MCs. Present development and futures prospects –Pr.Sawahel; Fev 2008

7. In the same line, the IDB 1440 Vision has identified education as one of its Strategic Thrusts. The Quick Win Project on Achieving Excellence in Science and Technology Higher Education was developed with the objective of building and retaining a critical mass of world-class scientists and technologists in targeted Science and technology areas; and promoting relevant research and development outcomes as well as improving and reforming the educational institutions in order to facilitate IDB member countries participation in the knowledge-based economy. To this end, roadmap(s) for S& T academic excellence for development has to be developed to open up higher education institutions to new technological innovation and opportunities as well as improving the ways in which knowledge is produced, managed, disseminated, accessed and controlled.

**III. METHODOLOGY AND SELECTION PROCESS**

8. To proceed with the implementation of the first component of the QW, which is the preparation of the Roadmap(s) and the organization of the Knowledge Sharing Workshop (see Annex-1), the following methodology has been used.

(1) *Priority science and technology fields.* An analysis of the results of various studies (“Status of Scientific Research in OIC Member States” performed by the COMSTECH in 2005; Arab foundation of science and technology; IDB science development network as well as national and regional strategies for science) allows identification of S&T fields that are both of regional interest and with presently high scientific potential. The fields which are highly critical to the economic development of member countries are identified in each of the three IDB regions (i.e. African, Arab and Asian regions) with more focus on fields that have a potential regional impact.

(2) *Institutions selection process.* The potential candidate institutions will be selected using international rankings including World Academic Ranking of Universities, Times Higher Education Ranking and Scientific Research Performance Ranking as well as regional rankings including Pakistan-based COMSTECH ranking and Turkey-based SESTRIC ranking. Also, other measures will be put in consideration in the selection process such as “IDB Science and Technology Prize” winner institutions, geographical distribution within each IDB region, the readiness of the selected institutions to meet the upgrading demands and institutions with potential for both national and regional impact on the development of knowledge based economy. In addition, the selection focuses on research centres or units within selected universities in order to facilitate the implementation process. Those centers should also have Master and or PhD degrees training programs.

**Table 1:** S&T fields of regional interest with present high scientific potential

S&T Fields	African Region	Arab region	Asian Region
Health	X		
Agriculture	X		
ICT		X	
Chemical engineering & Energy and Fuels		X	

Pharmacology and Pharmacy & Biochemistry and Molecular Biology			X
Materials science & Polymer Science			X

9. All the S&T fields appearing in the table are fields that are of strong interest to the scientists of the respective regions. ICT was identified as a priority research area for the Arab world at the occasion of the 2<sup>nd</sup> and 3<sup>rd</sup> Scientific Research Outlook (SRO) meetings organized by the ASTF in 2002 and 2003.

10. For the Africa region, the chosen fields are the health and agriculture. The initial focus in this region will be on the Agriculture sector.

11. For the Arab region, the chosen fields are the information and communication technologies (ICTs) and energy and fuel & chemical engineering fields. The initial focus on this region will be on ICT.

12. For the Asian region, the chosen fields are biochemistry and molecular biology & pharmacology and pharmacy as well as science polymers & materials science, and industrial applications. The initial focus in this region will be specifically on Nanotechnology.

13. Using the above two criteria (para 8), 15 selected educational institutions (5 within each of the three IDB regions "African, Asian and Arab regions") were initially identified for carrying out the upgrading and reforming process to promote scientific research in chosen strategic fields in Science and Technology. The chosen institutes seem to be ready to meet the upgrading demands and also have Master and or Ph.D degrees training programmes for science and technology workforce development. These institutes were initially recommended based on their potential impact on the development of the respective country/region as well as its readiness for meeting the upgrading demands and providing training programmes for human resource development

**Table 2:** Selected institutions

<b>African Region</b>	<b>Arab region</b>	<b>Asian Region</b>
Africa Rice Center / <b>Benin</b>	Assiut University / <b>Egypt</b>	Institute of nanosciences and nanotechnologies / Sharif university / <b>Iran</b>
Medical research council laboratories / <b>Gambia</b>	Islamic university of Gaza / <b>Palestine</b>	Institute of plant physiology, genetics & bio-engineering / <b>Kazakhstan</b>
African regional center for information science / University of Ibadan / <b>Nigeria</b> <b>Or</b> Centre for Entrepreneurship Development / University Benin / <b>Nigeria</b>	King Saud University / <b>Saudi Arabia</b>	Advanced centre for engineering excellence / International Islamic University Malaysia / <b>Malaysia</b>

Centre d'études régional pour l'amélioration de l'adaptation à la sécheresse / <b>Sénégal</b>	Institute of endemic diseases/ University of Khartoum / <b>Sudan</b>	International centre for chemical and biological science / University of Karachi / <b>Pakistan</b>
Uganda Virus Research Institute (PO Box 49, Entebbe) / <b>Uganda</b>	United Arab Emirate University / <b>UAE</b>	Institute of Solar Energy / Ege University / <b>Turkey</b>
Centre for Entrepreneurship Development / University Benin / <b>Nigeria</b>	United Arab Emirate University / <b>UAE</b>	Institute of nanosciences and nanotechnologies / Iran

14. It must be noted that the final selection of exact programme, department, unit or center within these institutions, to be subject to upgrading for achieving excellence in science and technology for development, will be made after the diagnosis process which will be conducted by asking the selected institutions to fill a comprehensive formulary. Following the respective IDB procedures, the concerned governmental institutions and IDB's representatives in the concerned country shall be involved, and the collected information will be assessed by missions to the institutions to get in touch with the reality on the ground and to ensure that the institutions have the necessary minimum standards to leap-frog to excel. This will also help in preparing science and technology-oriented projects for increasing the production of world class scientists and research and development for promoting value-added products for the private sector.

#### IV. TRENDS AND TOOLS

15. The reviews of the current literatures and views on transformation of higher education reveals the existence of many trends that should be included into the Roadmap for excellence.

##### Characteristics.

- (i) Transformation into research universities or international hubs of excellence;
- (ii) Increasing demand for higher education, particularly for science and technology based disciplines;
- (iii) Focus on quality in teaching, learning, research and service delivery;
- (iv) More institutional autonomy and university empowerment and self- funds generation;
- (v) Growing competition on specialized niche areas, strategic research priorities, quality student, quality staff;
- (vi) devoting more funds to finance research and teaching and learning;
- (vii) Infuse of ICT and high tech tools in teaching and research;
- (viii) Enhancing science and technology education through empowering staff with the skills and pedagogical and methodological knowledge;
- (ix) Linking the university to industry and society as a whole in order to get strength and make impact through producing employable graduates, high impact research and effective services to the industry and society;
- (x) Bridging the gap between theoretical research and applied technology and creating industry lab centers at Universities;

- (xi) More focus on human capital and intangible assets to stimulate creativity and innovation – fresh graduates and seniors given scholarships by industry to further develop practical invention to industry firms-
- (xii) Developing patents system in Muslim countries

### **Quality assurance:**

16. Quality assurance refers to a range of review procedures designed to safeguard academic standards and promote learning opportunities for students of acceptable quality. One of the major tools for achieving excellence in higher education is the implementation of an effective Quality Assurance System (QAS). Therefore, QAS should be given priority as it assists in creating system and environment to develop the skills and capacity and promote the growth of world class scientists.

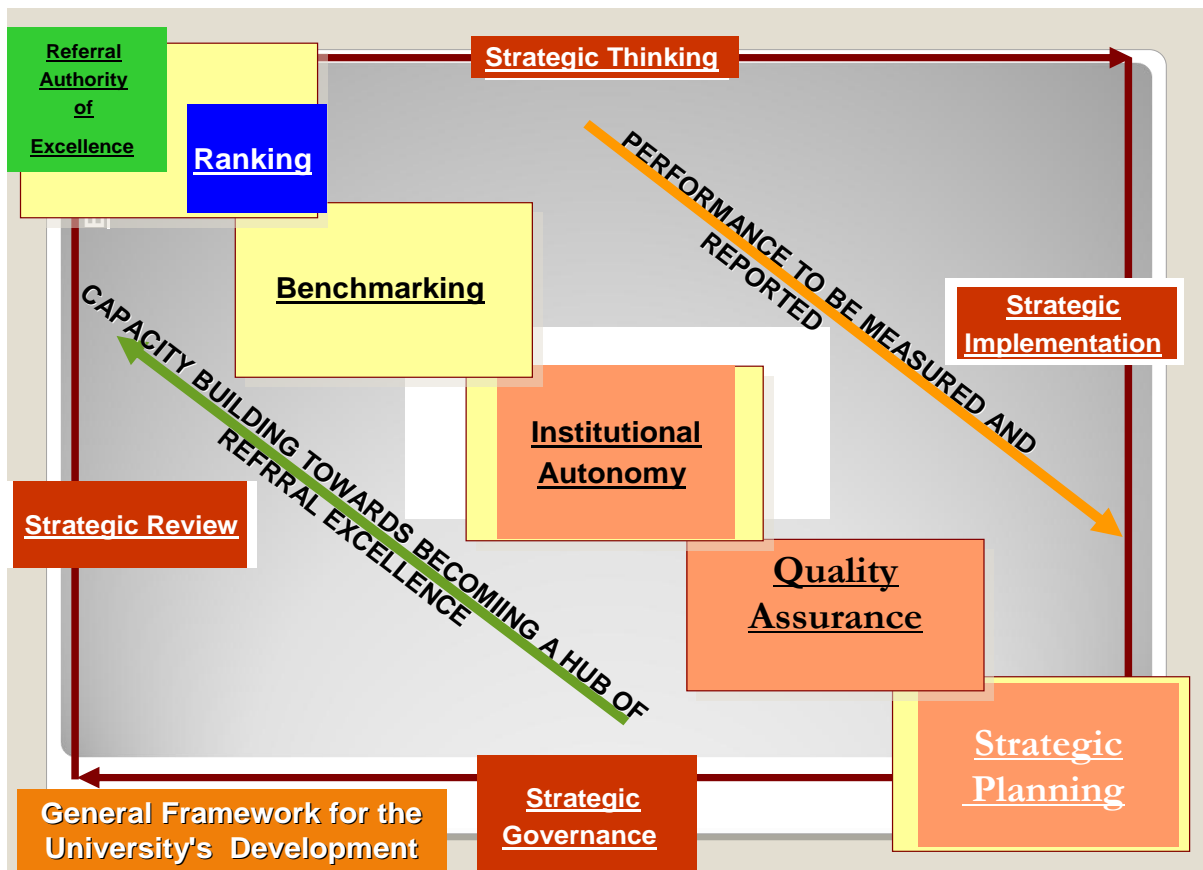
17. Quality assurance mechanism aims, among others to enhance the development of management system and human capital. Therefore, for the IDB to assist in upgrading selected universities to world class level, a quality capacity building should be designed and should include:

- (i) Quality management training;
- (ii) Establishing quality assurance units in universities;
- (iii) Preparing universities for accreditation by international accreditation Boards;
- (iv) Integrated ISO training;
- (v) Promoting young scientists and scientific discoveries;
- (vi) Creative thinking and quality initiatives;
- (vii) Strategic planning;
- (viii) Key performance indicators and quality measurement;
- (ix) Quality audit;
- (x) Academic review: reviewers, examiners, advisors;
- (xi) Benchmarking;
- (xii) Creative and innovative groups;
- (xiii) Human resources development;
- (xiv) Information capital capacity building;
- (xv) Leadership and governance training;
- (xvi) Integrated skills for academicians and administrators.

### **Development Framework**

18. The draft development framework below will be further discussed during the knowledge sharing workshop. It is intended to assist the selected universities to undergo a quick transformation for capacity building.

Figure 1. General Framework for University development



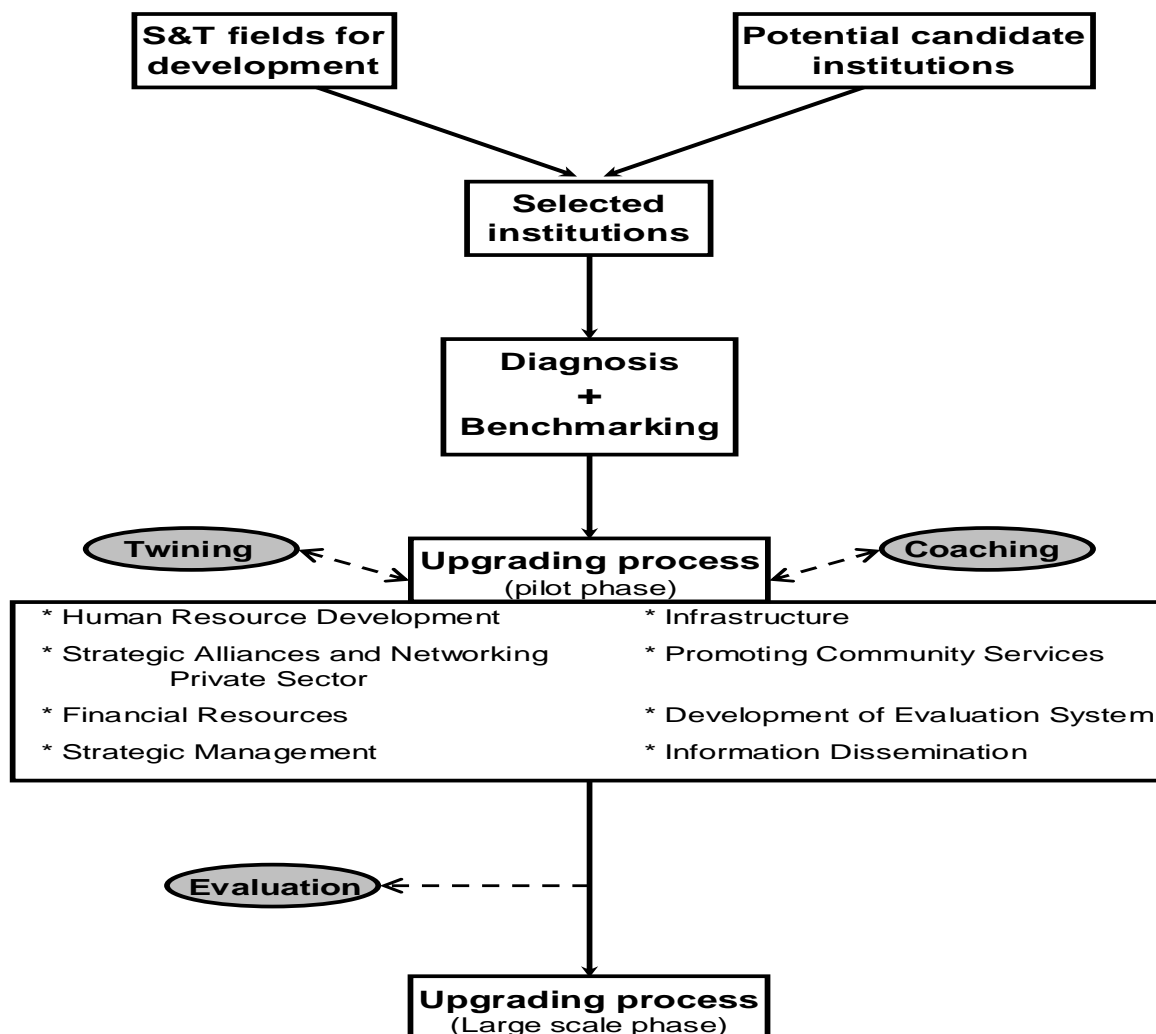
## V. INITIAL FOCUS FOR THE ROADMAP

19. The QWP should establish a mechanism for screening science and technology information to help universities to cooperate with the private sector for presenting models for scientific creative ideas that could be transformed into products and processes as well as setting up commercially viable science-based enterprises. This could help in creating employment and reducing poverty in IDB rural community as well as promoting knowledge-based economy in high and medium income IDB countries.

20. Prior of starting the pilot phase and in abid to make the gap analysis, formulate the necessary strategic initiatives to be undertaken for the upgrading (reform) process, and precisely define the objectives to be reached by the end of the upgrading, a diagnostic report for each selected institution as well as an appropriate benchmarking with world-class institutions should be carried out.

21. Following that, some vital interventions will be carried out for upgrading the institutions including human resource development, Strategic Alliances networking and Private Sector initiatives, Financial resources; Strategic Management; Infrastructure, promoting community services. In addition, a monitoring and evaluating system should be established as well as setting up information dissemination tools. The schematic roadmap could be as follows:

Fig. 2 Schematic representation of the roadmap



22. Thus, within the selected institutions located in different IDB regions the following axes could be considered to upgrade the institutions to meet the objective. This proposal will be finalized during the Knowledge sharing workshop including indicative costs by domains.

Fig 3: Roadmap strategic axes



23. The main aim of the road map is to increase the production of world class scientists and research and development for promoting value-added products for the private sector. A focus on **Human Resource Development** is needed through:

- Enhance the curriculum to reflect labor market needs in the S&T fields;
- Update of teaching resources adopting IT;
- Upgrade teaching staff through a planned staff-development plan;
- Enhance research skills, teaching skills through training programs;
- Continuous improvement of teaching processes and skills benefiting from the students' feedback and teachers evaluation exercises
- Development of student-centered approach learning, promotion of analytical skills, critical thinking, learning motivation; soft skills enhancement such as communication skills, presentation skills etc

24. The shortcomings of science education systems in IDB member countries have been highlighted by the lack of entrepreneurship and innovation in the region. For innovation to take root, the 'golden triangle' of academic institutions, governments and the private sector must cooperate in doing business. To establish *partnership* between the selected science and technology institutions and the private sector, it is crucial to base the development of S& T on **Building Strategic Alliances and Networking** by preparing the following:

(a) *Directory of S&T parks, incubators, and cities in IDB member countries.* This directory will highlight the important role of science parks in promoting the culture of innovation and competitiveness among businesses and knowledge-based institutions. It will be used as a guide to promote private sector involvement in the project as it will promote links between scientists at universities and R&D institutions and science parks

in IDB regions with the aim to facilitate the set up and development of innovation-based companies through incubation and spin-off processes.

*(b) System for promoting partnership between private sector and universities.* Islamic countries are entering a new phase of economic development with emphasis on the crucial role of the private sector and its potential impact on different branches of economy. Thus, they are urging their private sector to invest in technology in order to maintain their industrial or economic competitiveness relative to the industrialized countries. Technomics approach – which incorporates technology as a core driver of economic changes, and redefines the tools and strategies that can be adopted by firms, industries, or regions to improve competitive advantage and build success – could be considered as an ideal system for linking universities with the private sector.

*(c) Online directory for S&T associations, societies and networks in IDB member countries.* This directory will be used as a tool to attract potential partners to the project. The following interventions could be performed in the selected science and technology institutions:

- Directing curriculum towards the private sector needs.
- Preparing a scheme for Student placement in industry to produce ready industry graduates.
- Launching awareness program for private sector as well as researchers about the role of science in developing knowledge-based industry.
- Modifying the promotion roles of faculty and staff to make working with the private sector part of it.
- Preparing directory for staff with private sector experiences.
- Launching programs about science management and industrial innovation.
- Establishing a unit to be called (unit for investors) where investors can get all the necessary business-based information.
- Create academic chairs funded by the private sector

*(d) Financial Management Efficiency*

- Developing a comprehensive strategic plan on the university revenues.
- Developing indicators to measure the level of success in using the financial resources to enhance science and technology.
- Budget allocation as block grants for focused areas

*(e) Strategic Planning*

- Formulation of vision and mission in the focused areas
- Central and unified mechanism of policy formulation
- Development of capability for autonomy management
- Instituting good governance principles
- Formulate a strategic planning for the focused areas
- 

*(f) Physical Learning Environment*

Infrastructure needs adequate in the focused areas of the S & T such as labs, state of the art equipment and facilities for research undertakings

*(g) Promoting Community Services*

- Setting up of websites to disseminate information
- Programs to introduce the focused areas discoveries to the community
- Introduce life-long learning for the public in the science and technology areas

*(h) Establishing a Monitoring and Evaluation System.* The development of the evaluation and monitoring of the components of the road map is important to ensure what is the current status and how much assistance required to upgrade the institutions to attain the project objectives. A Quality Assurance System has to be incorporated so as the institutions can give transparent outlook to their undertakings. Benchmarks need to be established as indicators of the quality of the components and achievements monitored. A culture of continuous improvement has to be instilled through the evaluation system among the measures to be taken such as:

- Strategic planning
- Setting up key performance indicators
- Balanced score card
- Audit exercises
- Self assessment
- Surveys and feedback

*(i) Use of ICT.* In addition to other measures, the QW could set up a website to be used as a tool for:

- Communicating of the project to the potential donors,
- Disseminating the concept of the project,
- Promoting networking between concerned partners such as higher education institutions, science oriented private sector, science policy makers, ..... etc.
- Stimulating the exchanges of ideas and flow of knowledge,
- Enhancing cooperation among IDB member countries;
- Contributing towards innovation in the field of higher education as well as science and technology for development

## **VI. NEXT STEPS**

Based on the present general roadmap, three customized roadmaps will be developed for the three fields including ICT, agriculture and nanotechnology. The process will involve the institutions, Ministries of higher education and international universities. A knowledge sharing workshop will be organized to review, validate and enrich the general and customized roadmaps.

## ANNEX-1

### VIII. PROPOSED PROGRAM FOR THE KNOWLEDGE SHARING WORKSHOP

**DATE:** 2-4 November 2009

**VENUE:** Al-Akhawain University, Ifran, Morocco

**PARTICIPANTS:** About 60 participants

(Keynote Speakers, Representatives of selective OIC Countries, Representative form world class Universities, Representatives from Universities and Government of the host Country, Representatives of international institutions, Consultants)

**ORGANISER:** IDB, Rabat Regional Office

**LOCAL PARTNER:** University Al-Akhawain, Morocco

**OBJECTIVES:** The objective of this workshop is to develop sound models of excellence in S&T based on experiences learned from world-class institutions mainly on organizational setting, management system, work organization, leadership, resources mobilization and management, human resources development, monitoring and evaluation, linkages with the private sector. IDB will have the lead role by overseeing the entire process.

**OUTPUTS:** The main outputs of the workshop will be: (1) A validated general roadmap for achieving academic excellence in science and technology (2) three customized roadmaps in the three selected fields, these are Agriculture, ICT and Nanotechnology; (3) An action plan for the implementation of the customized roadmaps in three selected fields.

<b>Day 0</b>		
Time	Activity	Remarks
08:00 - 19:00	Arrival and Registration	
19:00 – 20:00	Dinner	
<b>Day 1</b>		
08:55 – 09:00	Recitation of the Holy Quran	
09:00 – 10:00	Opening Statement (AU, IDB, Morocco)	
10:00 – 10:15	Tea and Coffee Break	
10:15 – 11:00	Presentation of IDB Vision and QW Program	
	Presentation on IDB in Education Sector and QW Education Project	
11:00 – 11:30	Discussion on the QW Program	
11:30 – 13:00	Government Strategies for Education	3 Slots(Each, Speech: 15min Q&A: 15min)
13:00 – 14:30	Prayers and Lunch Break	
14:30 – 16:00	Government Strategies for Education	3 Slots(Each, Speech: 15min Q&A: 15min)
16:00 – 16:15	Tea and Coffee Break	
16:15 – 18:15	Government Strategies for Education	4 Slots(Each, Speech: 15min Q&A: 15min)
<b>Day 2</b>		
09:00 – 10:00	Keynote Speakers	2 Slots
10:00 – 10:30	Tea and Coffee Break	
10:30 – 13:00	Presentation of Universities and Q&A	4 Slots (Each, Speech: 20min Q&A: 20min)
13:00 – 14:30	Prayers and Lunch Break	
14:30 – 16:30	Discussion of the General Roadmap	
16:00 – 16:30	Tea and Coffee Break	
16:30 – 18:00	Discussion of the General Roadmap	
<b>Day 3</b>		
09:00 – 10:00	Presentations on the recommendation on the General Roadmap	
10:00 – 10:30	Tea and Coffee Break	
10:30 – 13:00	Discussion of Sector Roadmaps	Activities TBD by respective Consultants
13:00 – 14:30	Prayers and Lunch Break	
14:30 – 17:00	Discussing Sector Roadmaps	Activities TBD by respective Consultants
17:00 – 18:00	Closing Session	Presentation of Main Recommendations of the General Roadmap and the 3 Sector Roadmaps
<b>Day 4</b>		
9:00 - 17:00	Participants Departure	
09:00 – 13:00	Finalize the document by the Consultants and	

	AU Team	
13:00 – 14:30	Prayers and Lunch Break	
14:30 – 17:00	Working Session with the Consultants	

**ANNEX-2**

**Regional and International ranking of Universities in IDB member states**

**Arab region**

No	Institution	Country	Regional Ranking		International ranking		IDB Prize
			SESTRIC	COMSTEC	ARWU	Times	
1	Suez Univ	Egypt	7	4			---
	Cairo Univ	Egypt	20	---	402-508		Fac Engineering
	Ain Shams Univ	Egypt	---	12			---
	National Research Centre	Egypt	---	14			Yes
	Alexandria Univ	Egypt	---	15			---
	Mansoura Univ	Egypt	---	19			---
	Assiout Univ	Egypt	---	---			Fac agriculture
2	Kuwait Univ	Kuwait	10	5			---
3	INRA (National Agronomy Research Institute)	Morocco	---	---			Yes
4	Fac Sci / Islamic Univ of Gaza	Palestine	---	---			Yes
	Dept of Physics & Chemistry / Al-najjah Univ	Palestine		---			Yes
5	King Saudi Univ	Saudi Arabia	---	6			---
	King Fahd Univ of Petroleum	Saudi Arabia	---	11			---
	King Faisal Research Centre	Saudi Arabia	---	20			---
6	Sudanese Gezira Univ	Sudan	---	---			Yes
7	UAE Univ	UAE	9	18			---

## African region

No	Institution	Country	Regional Ranking		International ranking		IDB Prize
			SESRTCIC	COMSTEC	ARWU	Times	
	Institute of Food Technology / Dakar	Senegal					Yes

Note: No single science & technology institution from IDB member countries has appeared in the 2007 “scientific research performance ranking”

### Asian region (1/2)

No	Institution	Country	Regional Ranking		International ranking		IDB Prize
			SESTRIC	COMSTEC	ARWU(07)	Times	
1	Mamadaliyev Institute of petrochemical processes / national academy of sciences Azerbaijan	Azerbaijan					Yes
2	Bandug Istitute of technology	Indonesia				369	
	University of Indonesia	Indonesia				395	
3	Razi Univ	Iran	3				
	Tarbiat Modares Univ	Iran	4				
	Tabriz Univ	Iran	5				
	Amirkabir Univ of technology	Iran	15				
	Bu-Ali Sina Univ	Iran	17				
	Shiraz Univ	Iran	18				
	Univ of Teheran	Iran	19	25			
	Institute of advanced studies in basic sciences / Zanzan	Iran					Yes
4	Institute of plant physiology, genetics & bio-engineering of Kazakhstan	Kazakhstan					Yes
5	Univ Kebangsaan Malaysia	Malaysia	8			309	
	Univ Malaya Malaysia	Malaysia	13	13			
	Univ Sains Malaysia	Malaysia		21		307	
	Univ Putra Malaysia	Malaysia				304	
6	Quaid-i-Azam Univ	Pakistan	2				
	International center in chemical sciences / HEJ Univ / Karachi	Pakistan					Yes
	Pakistan Institute of nuclear science & technology	Pakistan					Yes

## Asian region (2/2)

No	Institution	Country	Regional Ranking		International ranking		IDB Prize
			SESTRIC	COMSTEC	ARWU(07)	Times	
7	Koc Univ	Turkey	1				
	Hacettepe Univ	Turkey	6	1			
	Istambul Univ	Turkey	11	2	402-508		
	Inonu Univ	Turkey	14				
	Cukurova Univ	Turkey	16	24			
	Ankara Univ	Turkey		3			
	Middle Eastern Technical Univ	Turkey		7			
	Gazi Univ	Turkey		8			
	Istambul Technical Univ	Turkey		9		390	
	Ege Univ	Turkey		10			
	Ataturk Univ	Turkey		17			
	Dokuz Eylul Univ	Turkey		22			
	Bilkent Univ / Ankara	Turkey					Dept. Electrical & Electronics engineering
8	Uzbek Academy of Science	Uzbekistan		23			

Note: No single science & technology institution from IDB member countries has appeared in the 2007 “scientific research performance ranking”