Shaheed Zulfikar Ali Bhutto
January 5, 1928 - April 4, 1979
Former Prime Minister of Pakistan

“We will give science and technology, requirements the highest priority and our attention. To implement any program of scientific and technological development, the country needs to train scientific manpower. In this, the schools, colleges and universities have to play their role. I desire that vast number of people of Pakistan should acquire technological skills. I want first-class science in Pakistan because nothing less is acceptable. And I wish Pakistan to be increasingly self-reliant in all aspects of technology.”

Address at the Inauguration Ceremony of Karachi Nuclear Power Plant, Karachi, Pakistan, November 28, 1972

Vision
Shaheed Zulfikar Ali Bhutto Institute of Science and Technology shall be a world class institute recognized globally for its excellence in education, scholarship in research and distinction in service.
Shaheed Mohtarma Benazir Bhutto

Former Prime Minister of Pakistan
and Founding Chancellor of SZABIST
June 21, 1953-December 27, 2007

“You have a great role to play in the development of the country. Pakistan is neither a resource-rich nation nor endowed with instant wealth such as oil. We can therefore, hope to solve our problems of underdevelopment and compete with other countries only through technological skill and brain power.”

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Editorial Board

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Manager QEC: Faryal Shahabuddin

Marketing Designer : Syed Bashir Ahmad

SZABIST Research & Development Annual Report 2011-2012
Chancellor’s Message

It is a matter of pride to witness yet another successful year of development in renewable energy, biomedical research, sustainable development, and the commendable work done by the Institutional Research/Quality Enhancement Cell (IR/QEC). I congratulate the staff working in the above areas for their competency and excellence.

In order to accentuate our research portfolio, in 2011-2012, Center for Renewable Energy Research (CRER) increased the pool of available renewable energy resources by developing a Bio Gasifier. In addition, a 5 KW generator was imported to increase production of electricity using Wind Turbine.

Moreover, Stem Cell Research Center (SCRC) broadened its research activities by adding a new domain called Natural Product Chemistry to help in inventing new drugs.

Also, Sustainable Development Research Center (SDRC) for energy sustainability identified areas of energy conservation at SZABIST-Research Villa.

The IR/QEC continued to review, assess and improve the quality of various SZABIST-operations. In the area of academics, among others, the IR/QEC, successfully completed HEC required Self Assessment Reports (SARs) of eight programs in the faculties of Management Sciences, Computing, and Social Sciences.

I am confident that the persistent efforts of the research centers will continue to expand the frontier of research at SZABIST.

Dr. Azra Fazal Pechuho
Chancellor, SZABIST
President’s Message

The Research and Development Annual Report 2011-2012 provides a synopsis of the activities performed by SZABIST’s Center for Renewable Energy Research (CRER), Stem Cell Research Center (SCRC), Sustainable Development Research Center (SDRC), and Institutional Research/Quality Enhancement Cell (IR/QEC).

The achievements of the above centers in stem cell technology, sustainable development, renewable energy, and institutional research/quality have further amplified the research output at SZABIST and expanded the knowledge base of the institution.

The work of the CRER, and SDRC have improved the standard of living of the villagers of Jaffer Jokhio Goth by providing them clean water, convenient means of cooking, and electricity.

Moreover, the successful research in SCRC enabled multiplication of Lilies and Orchids through micro-propagation. Also, developments in Natural Product Chemistry will enhance our knowledge of pharmacology.

The IR/QEC was awarded 90% and the highest ranking category “W” by QAA-HEC in their latest quantitative assessment in appreciation of the efforts made to improve the quality of the academic and other related operations of SZABIST.

The continuous improvements and innovations at SZABIST are the result of dedication, commitment, and focused application of the skills of SZABIST’s excellent staff.

I am sure that by continuing to maximize our opportunities, and using available resources effectively and efficiently, we will realize the objective of developing sustainable solutions to the challenges of the 21st century.

Dr. Saqib Rizavi
President, SZABIST
I. Introduction
Center for Renewable Energy Research (CRER) provides a platform for researchers and academicians to explore and introduce practical and reliable energy solutions by conducting cutting-edge research in renewable energy technologies.

II. Aim and Purpose of Research
CRER disseminates original scientific research and knowledge in the field of renewable energy to develop indigenous state-of-the-art commercially viable technologies in wind, solar, biomass, and wood-gas stove.

Team-CRER, instead of following commonly adopted route of reverse engineering the imported wind turbine, is involved in developing technology indigenously from local resources and talent. While this objective is challenging, success in achieving it will significantly boost the confidence of the researchers at SZABIST-CRER.

III. Infrastructure and Lab Facilities
Presently, CRER has five laboratories to facilitate its team in their researches. A brief description about the functionality of each lab is given below:

a. Composite Lab
   It is a glass manufacturing facility where wood work and fibre glass for wind turbine blades are fabricated.

b. Wind Turbine Generator Testing Rig
   The tests for wind turbine induction and permanent magnet generators are conducted at the custom built test rig. It consists of SHP inverter, power transmission link, sturdy bed, and up to 5KVA load bank to check its power capacity.

c. Electronics Circuit Designing Lab
   The Lab includes instruments for designing/trouble shooting electronics and electrical circuits.

d. Embedded System Lab
   The lab is used to control a device through programming using embedded hardware for automation purpose.

e. Design and Simulation Lab
   To check the efficacy of design, it is first simulated in this lab using different engineering softwares.

IV. Research Output
a. Existing Project Development
i. Wind Turbine
   In 2011-2012, Team CRER, in order to further increase the capacity of electricity generation, used a 5KW, “3 Phase AC Permanent Magnet Low RPM Wind Turbine Generator”.

To start functioning, the first step was to replace it with the already installed low capacity wind turbine generator. The second was to manufacture the mechanical fixtures of the generator along with its gears and tower. The third was to conduct an initial testing of generator on a test rig.

Based on the behavior of generator’s output, charging circuitry a high power rectifier circuit was designed. In addition, after getting adequate results from on-ground testing in laboratory, mechanical fixture and generator with 3 meter blades were installed. Presently, efforts are being made to test the performance of the generator on field.
CRER for the efficient burning of wood fuel developed a low-cost portable Wood-Gas stove, following the success of small prototype which contains up to 150 gm of wood, the prototype was redesigned using the large Imbert model and 650 gm of wood that last for several hours. In order to produce the new imbert-based gasifier prototype several modifications have been done. The modifications include changes in fitting, size of container, speed of blower fan, ceramic covering, and different types of wood. The modifications in the model greatly affect its burning quality. Also, experimental reading shows that the efficiency of the wood-gas stove increases with increase in quantity of wood.

ii. Wood-Gas Stove

b. New Project
   Bio Gasifier

In 2011-2012, CRER’s team expanded its operation by undertaking Biogas project. Biogas energy is one of the easily obtained renewable energy; which is mainly made up of carbon dioxide and methane, and found in sewage, manure of cattle and hens, organic waste from market, food industry and the like. It generates methane from the organic compounds which are fermented in the absence of air.

The project was initiated by designing a portable digester (an air-tight tank used to collect waste product), which could reduce methane gas emission by the decomposition of organic matter. Team CRER was unable to attain the desired pressure due to some leakage in the tank. In order to resolve the leakage issue and maintain inner pressure, the digestion process was repeated by using specialized tank called carbide tank and cow dung. The new tank was left to complete the process for 15 days. With the help of a new tank, the desired pressure for burning is now maintained.
V. Team-CRER

CRER has a small team whose members work very hard to explore indigenous techniques in the field of renewable energy.

Dr. Imran Amin, Head of CRER, earned his PhD in Mechatronics from Loughborough University, UK in 2007. He oversees and manages all research projects in CRER. His areas of interest are mechatronic systems, artificial intelligence, infrared imaging & thermography, X-Ray medical imaging, computer vision, automation, embedded systems and robotics.

Engr. Moezul Hassan, Research Officer at CRER, completed coursework of Master in Control Systems from National University of Science and Technology (NUST) in 2012. He earned his B.E in Electronics from Nadirshaw Edulji Dinshaw (NED) University in 2009. His expertise is analog circuit designing, instrumentation, control systems, power electronics, and energy conservation with practically implemented solutions.

Engr. Sarmad Hameed, Research Officer at CRER, is pursuing his Master Degree in Industrial Controls & Automation Program from Usman Institute of Technology. He earned his Bachelor Degree in Electronics from Sir Syed University of Science and Technology in 2010. His areas of interest are digital circuit designing, programming, troubleshooting, and power electronics.

VI. Plans for the Future

Team CRER will analyze the field behavior of Wind Turbine Generator on continuous basis to resolve any interruptions and make it adaptive according to practical conditions. It is expected that in few months the turbine will supply electricity at its highest capacity.
I. Introduction
Stem cell research and related fields have become a focal area of biological and medicinal studies. The opportunity to replenish the malfunctioned tissues in a human body is a revolutionary breakthrough in medicine and has created new and exciting possibilities of not only to cure some major diseases but also to make a positive economic impact.

II. Aim and Purpose of Research
The core research area of the Stem Cell Research Center (SCRC) is to study the physiological behaviors of stem cells during their growth, from an undifferentiated form to a well-defined differentiated form. SCRC has expanded its operations by adding natural product chemistry. It involves the isolation and purification of natural chemicals (metabolites) from the living sources and testing their activities against several pathogens and diseases like anti-cancerous, or anti-inflammatory. The discovery of bioactive metabolites helps in invention of drugs and has great implications in recent pharmacological researches.

III. Infrastructure and Lab Facilities
SCRC is fully equipped with the required instruments for the prescribed research. Also, team SCRC has full access to the high quality chemicals, reagents, and/or kits required to execute their researches. For the newly added research interests, the center is in process of getting more equipments and related chemicals for enzyme isolation, and metabolic bioactivity profiling.

IV. Research Output
a. Existing Project Development
   Micro-Propagation of Ornamental and Fruit Plants

   SZABIST-SCRC’s team is committed to providing effective relevant solutions for the farmers in Pakistan. Consequently, the plant tissue culture laboratory at SCRC has successfully implemented the micro-propagation technique for the mass production of disease free banana plants. The disease affecting banana plants is called Banana Bunchy Top Virus (BBTV), which is widely spreading due to non-availability of disease free planting material, lack of proper quarantine measures, presence of the virus vector throughout the banana belt, and a severe lack of awareness among growers regarding clean cultivation and management of fields against virus infection. For the process, the germplasms of five different certified disease free banana varieties were imported from International Network for Banana and Plantain (INIBAP), Belgium and micro-propagated at the SCRC laboratory followed by the successful acclimatization of tissues cultured plantlets at the SCRC greenhouse. More than 750 banana plants were transferred to the SZABIST agriculture research station at Gharo, from where they were planted in fields and showed a normal growth.

   The team’s other target was to produce, on a large scale, exotic ornamental plants which are difficult to grow and multiply under natural conditions. Currently, research is being conducted on Lilies and Orchids. The tissue culture protocol for the micro-propagation of these plants is successfully established. At SCRC greenhouse, Lilies are now fully grown with usual flowering and the multiplication of orchid plantlets is taking place at the SCRC’s plant tissue culture laboratory. Soon the tissue cultured plantlets will be transferred to the green house for acclimatization experiments.
b. New Projects

i. Anti-Microbial Profiling of Different Plant Extracts

At SCRC, natural product chemistry is a relatively new field. Initially, the anti-microbial effects of various plant extracts (e.g. Orchids, hura coccinea, Dracaena reflexa, Cestrum nocturnum, Actinidia delicosa) on a range of microbial strains were studied. The results are very promising and the manuscripts for these studies are under preparation for publication in various journals.

ii. Isolation, Purification, and Characterization of Enzymes from Microbial Source

The isolation and characterization of industrially important enzymes is also a new endeavor of the team SCRC. We are focusing on isolation and purification, followed by a complete characterization of different enzymes from various microbial sources. Currently three enzymes, i.e. Cellulase, Lipase, and Amylase, are being worked upon due to their potential use in different industries.

V. Team-SCRC

Dr. Kashif Ali, Head of SCRC, acquired his PhD from Natural Product Laboratory, Leiden University, The Netherlands, through an Overseas Scholarship offered by Higher Education Commission (HEC) of Pakistan. His work was on Nuclear Magnetic Resonance (NMR) spectroscopy-based metabolomics of grapes and derived products. After his PhD, he went to Qiagen (Germany) on Marie Curie Secondment (FP7 program) for his first post doctorate, followed by a second post doctorate in Leiden University, Netherlands, on marine sponge metabolomics. Before joining SCRC, he was doing his third post doctorate at the University of Florida, USA, on primary metabolism in Maize. His current interest is to develop a natural product chemistry lab for the metabolic and bioactivity profiling of various medicinal and ornamental plants.

Mr. Shahab Mehmood, Research Associate at SCRC, has an M.Phil from Dr. Panjwani Center for Molecular Medicine and Drug Research. He has worked on HEC-funded projects dealing with the treatment of Parkinson’s, Alzheimer’s and immunological diseases. His expertise includes tissue preparation for various types of microscopy. He also has experience in developing in-vivo degenerative disease models. Currently he is engaged in various experiments related to enzyme isolation and purification.

Ms. Asma Bashir, Senior Research Officer at SCRC, has Master’s in Microbiology from Department of Microbiology, University of Karachi. Her current research is to develop a complete spectrum of diagnostic procedures needed for establishing and running a successful Diagnostic Centre. Her specialized emphasis is to work on characterization and maintenance of microbial strains for the production of various enzymes.

Ms. Farah Ashraf, Research Officer at SCRC, has M.Sc. in Biotechnology from Department of Microbiology, University of Karachi. Her main assignment is to propagate Banana Bunchy Top Virus (BBTV) free plantlets by using plant tissue culture technology and cultivate disease indexed plants, after which the plants are regularly analyzed against infection employing molecular techniques like Polymerase Chain Reaction (PCR) and Enzyme Linked Immunosorbent Assay (ELISA). She is also involved in the tissue culture of exotic ornamental plants, such as, Orchids and Lilies.

VI. Plans for the Future

Metabolic and Bioactivity Profiling of Ornamental and Medicinal Plants: Metabolomics

In natural product chemistry, metabolomics is relatively a new field as compared to its analogous technologies, such as genomics and proteomics. The recent trends exhibit a clear shift of the phenotyping studies towards metabolomics, as it is closer to the phenotype of the studied plant, animal, or microbe. Metabolomics will be a new addition in SCRC portfolio. Initially, team SCRC plans to do the metabolites characterization of different orchid varieties using NMR-based metabolomics. The bioactivity profiling of different extracts of *Ocimum*, and its correlation with the corresponding metabolomics data, will also be considered.
I. Introduction
The most frequently used definition of Sustainable Development is given in the Brundtland Report as “Development that meets the needs of the present without compromising the ability of future generations to meet their own needs”. Hence the focus of Sustainable Development Research Center (SDRC) activities is on Renewable Energy, Environment, Sustainable Business and Rural Development, as all of these factors provide growth that protects the environment.

II. Aim and Purpose of Research
At SDRC, the four major identified domains of work are:

1. Conducting research to enhance the use of energy conservation for sustainable business development.

2. Creating awareness about the link between environmental protection through energy efficiency, energy conservation, and sustainable development.

3. Developing sustainable rural development models in the areas of sustainable energy, health, education, and entrepreneurship.

4. Writing research papers and recommending policies on environment, energy and sustainable development for the well-being of the society.

III. Research Output
a. Existing Project Development
   Water Conservation and Storage at Jaffer Jokhio Village
The aim of Jaffer Jokhio Village project was to convert the village into a model sustainable village. The baseline study had identified water shortage as one of the major problems. The immediate concern of the villagers was to conserve water and avoid water loss due to pipe line leakage, theft or unavailability of storage facility.

b. New Projects
i. Awareness Campaign on the “Health Hazards of Consuming Gutka”
Sustainable development can’t be achieved by any society if it’s citizens are not healthy. Team SDRC, after conducting a thorough research identified, that the consumption of “Gutka” was destroying lives of people especially in the lower income groups. Thus, to create awareness on the making of Gutka using harmful ingredients and its fatal effects on the addicts, a presentation on the “Health Hazards of Consuming Gutka” was given to the staff of SZABIST, Karachi in April 2012. As a result, participants were determined to spread the knowledge acquired against Gutka consumption.
ii. Energy Audit at Research Villa

Team SDRC, taking inspiration from the saying “Be Energy Efficient since Energy Conserved is Energy Produced” conducted an “Energy Audit” at SZABIST- Research Villa, as it is the best way to identify areas from where energy can be saved. Energy audit checklist and follow up forms were prepared and distributed amongst the three centers i.e. CRER, SCRC and SDRC of Research Villa to record total energy consumption throughout the month. Hence, enabling team SDRC to identify devices consuming more energy and potential energy saving opportunities.

IV. Team-SDRC

Mr. Masood Ahmed, Head of SDRC, is an Electrical Engineer, currently enrolled in PhD program at SZABIST. He has earned his MS in Management Sciences from SZABIST and MBA from IBA, Karachi. His areas of interest includes renewable energy, sustainable development and economic growth. He has participated in various policy formulation forums, workshops and conferences, and given presentations on renewable energy policy, energy conservation, energy pricing and sustainable development.

Ms. Nosheen Munir, Research Officer at SDRC, has an MBA in Marketing from SZABIST, Karachi. Her research focus is sustainable rural and business development via use of renewable energy. Currently, she is working on identifying potential energy saving areas at research villa.

V. Plans for the Future

Given the social responsible focus of SZABIST-Social Sciences Department and activities of SDRC, plans are in final stages to merge the two departments. With this merger the new Head of SDRC will be Dr. Riaz Ahmed Shaikh. Dr. Shaikh intends to achieve SDRC objectives with the help of following projects:

a. Medical Facilities at Jaffar Jokhio Village

Team SDRC plans to address the medical concerns of the people of Jaffer Jokhio Village by organizing medical awareness program, arranging fortnightly visit of a team consisting of four doctors and other paramedic staff, providing free medicines and conducting free medical test. In this regard, negotiations are underway with District Health Officer (DHO), Thatta, Medical Superintendent (MS) Ghoro, and People Medical.

b. Need Assessment by Community Services Students

Team SDRC along with Community Services students of Social Sciences Programs plans to regularly visit Jaffer Jokhio village to conduct need assessment exercise. This will enable villagers to improve coordination among them and overcome their minor problems.

c. Fund Raising Event

To increase financial support for various activities at Jaffar Jokhio Village, plans are to organize various programs including Qwali, Stalls for fund raising, Bake Sales and the like.

d. Water Supply Scheme

To resolve water supply problem in Jaffar Jokhio village, team SDRC plans to meet sponsors for installing hand pumps at the village.

e. Solar Solution

Team SDRC plans to utilize Solar Energy for the provision of electricity at the village. For this purpose, negotiation with Zindagi Services Ltd is in progress.

f. Guest Lecture Sessions

SDRC plans to invite several renowned guest speakers including Tasneem A. Siddiqui, Aquila Ismail, Arif Hasan, and more to share the concept of community involvement in the process of it’s development.

g. Civil Society Project

SDRC team will be visiting various development projects in Karachi including: Orangi Pilot Project, Khuda ki Basii, TCF, Liyari Community Development Projects and the like, to acquire knowledge and develop liaison.
I. Introduction
The Institutional Research/Quality Enhancement Cell (IR/QEC) continued to ensure the adherence to and improvement of high quality standards of education being imparted at SZABIST. The success of the IR/QEC department can be well judged from the fact that the department was ranked in “W” category, the highest category, in the recent quantitative assessment conducted by the Quality Assurance Agency (QAA)-Higher Education Commission (HEC).

In 2011-2012, the IR/QEC in quest of further improving the quality of various academic and administrative operations conducted various reviews, analysis, and assessments.

II. Quality Assurance Measures Taken at SZABIST
The IR/QEC categorized the quality assurance assignments into: Academic Operations, Policies, and Outreach.

a. Academic Operations
The IR/QEC undertook the following assignments to monitor and improve the quality of academic operations:

i. Strengthening the Institutional Research - Self Assessment Report (SAR)
Since the last three years, in order to improve the academic standards, enhance the students’ learning process, identify whether the institution’s programs meet the educational objectives and outcomes, and provide feedback for quality assurance of the academic programs, the IR/QEC is rigorously conducting and managing the Self-Assessment process of various academic programs. The process requires preparation of Self Assessment Report (SAR) consisting of Program Team (PT) Report, Review by IR/QEC, and Assessment Team (AT) Report. In 2011-2012, the SAR of the 5 programs (BS in Social Sciences, Masters of Business Administration-36 credit hour, 72 credit hour, 90 credit hour, and MS Computing 33 credit hour) have been completed and submitted to QAA-HEC. In future, the department intends to produce SAR of Bachelors of Business Administration, Executive Masters of Business Administration, MS in Social Sciences, and MS in Management Sciences programs.

ii. Syllabus Correlation
The IR/QEC staff performed the syllabus correlation exercise to ensure consistency between the course descriptions provided by the instructors and the course descriptions provided in the Course Catalogue 2011. As a first step towards rectification, inconsistencies in the course descriptions were communicated to the Program Managers.

iii. Measuring Consistency between Exam Papers and Course Outlines
To ascertain that high academic standards are maintained at SZABIST, the IR/QEC assessed the exam papers and course outlines of 2011. The purpose was to identify whether exam questions tested students on the material given in the course outlines. The evaluation of the target sample indicated that a high percentage ranging from 90% to 100% of course material was covered in the exams. The focus group successfully maintained the expected academic quality standards by covering in the exams the material identified in the course outlines.

iv. Preparing and Improving the Quality of Publications
Since its inception, the IR/QEC staff members are meticulously working to improve the quality of various important publications of SZABIST. In 2011-2012, the team reviewed and edited various publications including Student Handbook 2011 (Dubai Campus), Prospectus 2011 (Dubai Campus), Student Handbook 2012 (Karachi Campus), SZABIST Trust Annual Report 2010-2011, Research and Development Annual Report 2010-2011, Course Catalogue 2012 (Karachi Campus), and the 1st and 2nd edition of the newsletter “SZAB’nings”.

Research & Development Annual Report 2011-2012
iii. Strengthening Employee Appraisal System for Human Resource Management
A comprehensive and objective appraisal system was developed at SZABIST by the Human Resource Department to measure the performance of faculty and staff, and reward them accordingly. This development was the result of an audit conducted by IR/QEC to identify the existence of an efficient employee appraisal system.

iv. Institutional Research Studies
The IR/QEC staff members, along with their on-going assignments, initiated a number of studies. The following studies were undertaken with the aim of facilitating Senior Management in the review of policies, developing strategies, and overcoming identified shortcomings:

- Comparative Analysis of the Effective Cost of Education in Some of the Leading Business Institutes of Pakistan (LUMS, IBA, SZABIST, Iqra and Iqra)
- Gender-Based Differences in Academic Performance: A Case Study of SZABIST Students
- A Comprehensive Analysis of the BBA program at SZABIST
- Quality Assurance at SZABIST: Measures, Challenges, and Impact
- A Comparative Analysis-Karachi, Islamabad and Dubai Campuses of SZABIST

v. Institutional support to Dubai Campus
The IR/QEC has undertaken various assignments and provided significant institutional support to Dubai campus. For example, the recommendations given by the Head of IR in the diagnostic report prepared for improving Dubai campus’s academic policies and operations were approved by the Board of Trustees. As a result of their implementation, the programs offered by Dubai campus are now approved by Knowledge and Human Development Authority (KHDA) of Dubai. Also, the campus was awarded highest ranking category i.e. “W” by the HEC, Pakistan.

vi. Instructor Course Portfolios (ICP)
The IR/QEC analyzed ICPs of the Dubai campus Program Managers for 2011, to determine whether consistent ICP format was being adopted and implemented. The ICPs are maintained to measure the achievement of course learning outcomes compared with the learning objectives.

b. Policies
The IR/QEC has taken the below mentioned quality assurance measures to further strengthen the SZABIST policy framework:

i. Surveys
The IR/QEC staff members carefully analyzed the feedback solicited by the stakeholders from various (graduating students, alumni, full-time faculty, and employers) surveys. Consequently, enabling Senior Management to rectify identified policy and procedural shortcomings in SZABIST operations and provide policy guidance.

ii. Admission Data Analysis
Admissions data for 2009-2011 was analyzed by the IR/QEC staff. As a result, the department was able to provide guidance for future academic operations, ensuring competitiveness, and determining marketing strategy.

zh. Outreach
Relations with HEC and other Regulatory Bodies
The IR/QEC, apart from performing activities for improving quality of education being delivered at SZABIST, acted as a focal point for HEC and other regulatory bodies. To deal with these bodies the staff members were required to maintain general liaison, fulfill information provision requests, and compile and submit documentation. In 2011-2012, the department performs the aforementioned activities for various regulatory bodies including; HEC-QAA, Chartered Inspection and Evaluation Committee (CIEC), HEC’s Statistical Unit, HEC’s Digital Library, KHDA of Dubai (UAE), and Asia Pacific Quality Assurance Network (APQN).
III. Team-IR/QEC

Dr. Saqib Rizavi, President of SZABIST and the Head of Institutional Research Department, earned his PhD in Economics from Northeastern University, Boston, Massachusetts, USA, a Masters in Development Economics from Vanderbilt University Nashville, Tennessee, USA, and a Masters in Economics from Punjab University, Lahore, Pakistan. Before joining SZABIST in May 2010 as Senior Strategic Advisor to the Board of Trustees and Head of Institutional Research Department, Dr. Rizavi, worked for the International Monetary Fund (IMF) for nearly two decades, served in the Planning Commission of the Government of Pakistan, worked at a private sector financial institution in Pakistan, and a consultancy firm in the United States. In the course of his professional life he has worked on a variety of public policy issues in almost a dozen countries in the Middle East, West Africa, East Africa, South America, and the Caribbean. Dr Rizavi was appointed President of SZABIST in March 2011 by the Board of Trustees.

Ms. Faryal Shahabuddin, Manager QEC, earned her MBA from Karachi University. After joining IR/QEC in April 2010 as an Institutional Research Officer, she remained involved in preparing SARs of various programs, conducting various analyses, editing of SZABIST Publications, and being an integral part of maintaining close relations with the higher education regulatory bodies. Currently, she is working on a number of assignments, such as, data compilation for Fact Book, comparative cost analysis of various business institutes of the country, analysis of the BBA program, analysis of various surveys, and Research and Development Annual Report 2011-2012.

Ms. Hira Anwar, Assistant Manager QEC, earned her MBA from SZABIST and joined the IR/QEC in June 2010. From the very beginning, she was involved in initiating various assignments for improving quality of various policies and procedures of SZABIST. For example: SZABIST Trust Annual Report, and Admission analysis. Also, she has edited various SZABIST Publications, and prepared the SARs of various programs. Her current work entails preparing the SZABIST Trust Annual Report 2011-2012, writing a paper on “Quality Assurance at SZABIST: Measures, Challenges, and Impact”, and conducting the next round of Admission Analysis.

Ms. Mahwash Imtran, Institutional Research Officer, earned her MBA from SZABIST and joined the IR/QEC in February 2011. She has worked on improving quality of academic operations, such as, identifying syllabus correlation, measuring consistency between exam papers and course outlines, analysis of surveys, and review and editing of various publications. She is currently working on the SARs of various programs, editing of “SZAB’nings”, writing a paper on “Gender-Based Differences in Academic Performance: A Case Study of SZABIST Students”, and analyzing various surveys.

Ms. Fatemah Mohsin, Institutional Research Officer, earned her MBA from SZABIST. She is involved in conducting analysis, reviewing documentation, and editing and designing of publications. She is currently working on SZABIST Trust Annual Report 2011-2012, preparing SARs of various programs, and analyzing various surveys.

IV. Plans for the Future

The IR/QEC plans to continue it’s regular assignments and take new initiatives for further strengthening the quality of education at SZABIST.

Some of the regular activities will include; the initiation of the Self-Assessment Process of the remaining programs, conducting the next round of the surveys, reviewing, editing, and publishing Course Catalogue, Student Handbook, Research and Development Annual Report, SZABIST Trust Annual Report and “SZAB’nings.”

New initiatives will include conducting the analysis of the MBA Program and the Admissions Analysis for 2012, initiating the Institutional Performance Evaluation (IPE) requirement of the HEC, and publishing the Fact Book, among others.
Senior Faculty & Program Managers

Dr. Amanat Ali Jalbani
Vice President (Academics)
Dean of Management Sciences

Ms. Wajeeha Fatima Javed
Head of Academic Services
Program Manager
Bachelor of Business Administration
(Yr 3 and 4)

Mr. Fahad Zuberi
Program Manager
Bachelor of Business Administration
(Yr 1 and 2)

Dr. Nadeem A. Syed
Program Manager
MS Management Sciences and
PhD Management Sciences

Ms. Shehla Najib
Program Manager
BA in Business Studies

Ms. Hina Mubeen
Program Manager
Master of Business Administration Day

Dr. Imran Amin
Head of Computing
Head of Center for
Renewable Energy Research

Mr. Masood Ahmed
Program Manager
Master of Business Administration
Evening

Dr. Husnain Mansoor
Program Manager
MS Computer Science and
PhD Computing

Ms. Subeika Rizvi
Program Manager
Executive Master of Business
Administration

Mr. Asim Riaz
Program Manager
BS Computer Science

6. In 2011-2012, Dr. Mustaghfa-Rahman was the Program Manager of MS Management Sciences and PhD Management Sciences programs.
## Senior Faculty & Program Managers

<table>
<thead>
<tr>
<th>Name</th>
<th>Position</th>
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<tbody>
<tr>
<td>Dr. Riaz Sheik</td>
<td>Head of Social Sciences Program Manager MS Social Sciences and PhD Social Sciences</td>
</tr>
<tr>
<td>Ms. Shaista Sarki</td>
<td>Head of Law Program</td>
</tr>
<tr>
<td>Dr. Farheen Nasir</td>
<td>Program Manager BS Social Sciences</td>
</tr>
<tr>
<td>Dr. Ghazala Rahman Raﬁq</td>
<td>Director Sindh Abhyas Academy</td>
</tr>
<tr>
<td>Mr. Shehram Mokhtar</td>
<td>Head of Media Sciences Program Manager BS Media Sciences and MS Media Studies</td>
</tr>
<tr>
<td>Dr. Mustaghis-ur-Rehman</td>
<td>Faculty Management Sciences</td>
</tr>
<tr>
<td>Mr. Salman Abedin</td>
<td>Program Manager Master of Advertising and Master of Television Production</td>
</tr>
<tr>
<td>Dr. Manzoor Ali Isran</td>
<td>Faculty Management Sciences</td>
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<td>Dr. Faraz Junejo</td>
<td>Head of BE Mechatronics</td>
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<td>Dr. Syed Saif-ur-Rahman</td>
<td>Faculty Computing</td>
</tr>
<tr>
<td>Dr. Kashif Ali</td>
<td>Program Manager BS Biosciences</td>
</tr>
</tbody>
</table>
# Budget Allocations for Research

## (Research Budget as Percentage of SZABIST Budget)

<table>
<thead>
<tr>
<th>Year</th>
<th>Research (Rs. Millions)</th>
<th>SZABIST (Rs. Millions)</th>
<th>Percent <em>Research Budget as Percentage of SZABIST Budget</em></th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>5.0</td>
<td>175</td>
<td>2.8</td>
</tr>
<tr>
<td>2009</td>
<td>3.7</td>
<td>193</td>
<td>1.9</td>
</tr>
<tr>
<td>2010</td>
<td>23.5</td>
<td>289</td>
<td>8.1</td>
</tr>
<tr>
<td>2011</td>
<td>29.8</td>
<td>468</td>
<td>6.4</td>
</tr>
<tr>
<td>2012</td>
<td>22.0</td>
<td>406</td>
<td>5.4</td>
</tr>
</tbody>
</table>

![Pie Chart showing budget allocations]
Publications, Conferences, Workshops, Webinar, Events, and Visits

Publications

Center for Renewable Energy Research

i. Publication in Conferences:


ii. Publication in Journal


Stem Cell Research Center

Publication in Journal


Sustainable Development Research Center

i. Publication in Conferences:

ii. Articles/Newsletters:

iii. Research Report/Proposal:

Conferences

Sustainable Development Research Center

SDRC participated in the:

Workshops

Stem Cell Research Center

SCRC participated in the Workshop on “PCR Technology” at Liaquat National Hospital, Karachi, on 21-22 February, 2012.

Sustainable Development Research Center

SDRC participated in the Workshop on “Science and Technology Policies and Planning in SAARC countries” at NUST, Islamabad on 10 April 2012. Mr. Masood Ahmed, Head of SCRC gave presentation on “Renewable Energy: Panacea for Pakistan’s Energy and Economic Woes”.

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Institutional Research Department/Quality Enhancement Cell

In 2011-2012, the IR/QEC staff attended the following workshops arranged by QAA-HEC. The workshops are arranged to update participants about criteria and standards set by the HEC for quality assurance in higher education:

- Peer Review of Self-Assessment Report held in October 2011, at HEC Regional Centre, Karachi.
- Quality Assurance Practices (Criterion 1 of SAR Program Mission, Objectives & Outcomes) held in February 2012, at HEC, Islamabad.
- Role of Assessment Team in Self Assessment Process held in June 2012, at Institute of Business Administration (IoBM), Karachi.

Webinar

In continuation of apprising themselves with different quality assurance methodologies, the IR/QEC participated in the webinar on “Calculation of H-index” held in March 2012, conducted by members of QECs e-group.

Events

Sustainable Development Research Center

SDRC participated in a carnival organized by the World Wide Fund (WWF) for Nature Pakistan on “Conservation of Environment and Natural Resources”, on 22 January 2012, at PAF Museum, Sharah-e-Faisal Karachi. Team SDRC performs following activities to gain maximum benefit from the event:

- Introduce Solar Cooker and it’s usage by the community through Panaflex posters.
- Displayed quilts and traditional clothes designs made by rural women.
- Played documentary and video on Jaffir Jokhio Village project and SDRC journey, respectively.

Visits

Stem Cell Research Center

- Mr. Shahab Mehmood visited the “Center of Excellence in Molecular Biology” in Lahore on 24 September 2011, where he underwent one week training on the regeneration of skin in laboratory.
- Ms. Asma Bashir visited “DOW University of Health Sciences, Ojha Campus” in Karachi from 12-22 September 2011, where she learned development of diagnostic center as a commercial entity.