# King Fahd University of Petroleum and Minerals

**11 March 2007**
**www.kfupm.edu.sa**

## Introduction and background

Overview of the higher education system

KFUPM overview

KFUPM strategy

Key research issues and initiatives

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# Structure of the Higher Education System

**Council of Higher Education**

**National Commission for Assessment & Academic Accreditation (NCAAA)**

**Ministry of Higher Education**

**Other HE Entities (except Military Academies)**

National Center for Measurement & Assessment

Universities (19) Males & Females

Teachers Colleges– Males (18)

Girls Colleges (102)

Private Institutions

**Budget**

**Ministry of Finance**

## The universities directly negotiate their budgets with the Ministry of Finance

# The Council of Higher Education

## Membership & Functions

- **Chaired by HM the King**

- **Membership consists of:** Ministers of Higher Education, General Education, Finance, Labor, Planning and Economy, Civil Service, and Rectors of the Universities

- **Functions:**

  - Ensures coordination among universities

  - Approves bylaws and guidelines for university operations.

  - Approves the creation of new institutions of higher education

  - Approves new academic colleges and units

  - Appoints Vice Rectors of Universities.

# Characteristics of the Higher Education System

## Governance

- Each University has a Board comprised of the Minister and university administrators

- Decision making tends to be centralized

## Budgeting

- 100% government funding

- Donor contributions are minimal

## Appointment of Officials

- Rectors are appointed through royal decree

- Deans are appointed by the Minister

- Chairmen are appointed by the Rector

# Characteristics of the Higher Education System

## Access

- Tuition-free education and monthly stipends

- Enrolment of 600,000 students with 2% in private institutions

- Approx. 60% females & 40% males

## Programs

- New colleges & departments are approved by the Council of Higher Education

- Recently approved colleges are focused on Engineering, Medicine, & IT

## Research

- Funded from the University budget and KACST

- Grants and contract research are funded by industry

## Quality Assurance

- NCAAA ensures quality of programs to meet international standards

- Some institutions have periodic internal/external assessments/accreditation

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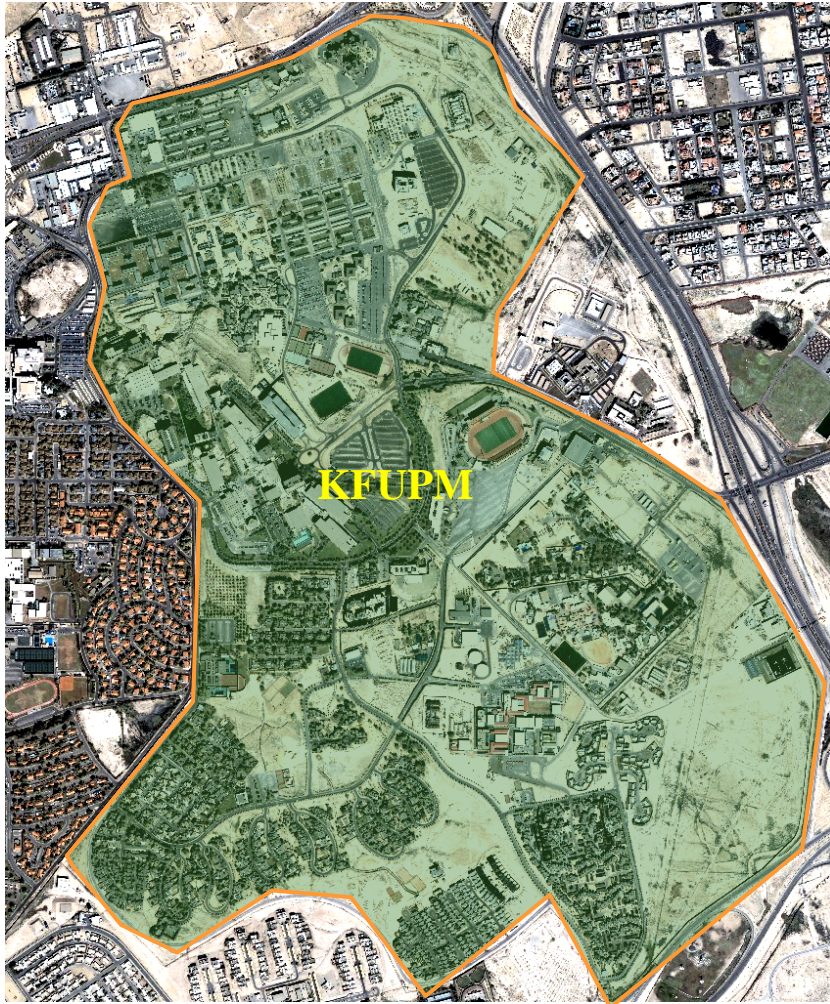# KFUPM … Then and Now

## College of Petroleum and Minerals, 1963



## KFUPM now…



2-year technical college
76 students
14 faculty members

More than 8,300 students (Main Campus)
Approximately 750 faculty members
6 colleges (BS, MS and PhD)
2 Community Colleges (1500 students)

# KFUPM Campus



KFUPM

## Facts & Figures

- Campus area of more than 4 km$^2$ and serves over 20,000 people

- 1,100 housing units for faculty and staff

- Student dorms for 4,000 students

- Sports & other amenities

- Medical center

- Community center

- New projects with a budget of $260 MM for:
  - Housing
  - Academic & Administration buildings
  - Science park complex
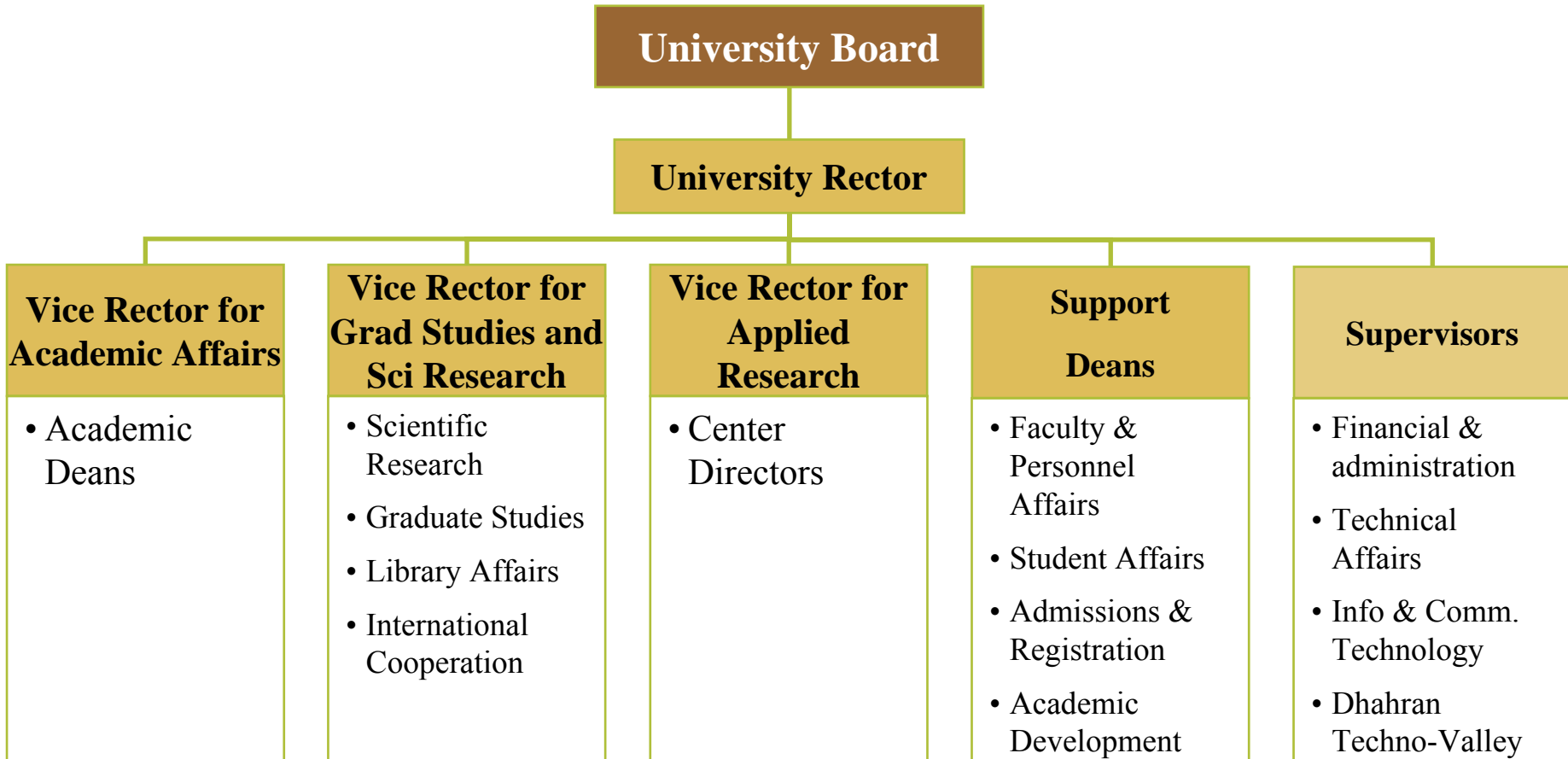
# KFUPM Vision & Mission

## Vision

To be a vibrant multicultural University of international repute, focused on quality education and innovative research that prepares professionals and entrepreneurs to lead social, economic and technical development in the region

## Mission

- Prepare professionals empowered with the knowledge, skills, values and confidence to take a leadership role in the development of the Kingdom in the fields of science, engineering, environmental design and business.

- Produce research that contributes to the knowledge and sustainable development of the Kingdom and region by providing innovative solutions to identified economic and technical problems and opportunities.

- Provide a stimulating campus environment for the welfare of its students, faculty and staff, and offering outstanding professional services and out-reach programs to the society at large.

# KFUPM Administrative Structure

**University Board**

**University Rector**

| **Vice Rector for Academic Affairs** | **Vice Rector for Grad Studies and Sci Research** | **Vice Rector for Applied Research** | **Support Deans** | **Supervisors** |
|---|---|---|---|---|
| • Academic Deans | • Scientific Research<br>• Graduate Studies<br>• Library Affairs<br>• International Cooperation | • Center Directors | • Faculty & Personnel Affairs<br>• Student Affairs<br>• Admissions & Registration<br>• Academic Development | • Financial & administration<br>• Technical Affairs<br>• Info & Comm. Technology<br>• Dhahran Techno-Valley |

# The University Board

## Membership & Functions

- Chaired by the Minister of Higher Education and consists of Rector, Vice Rectors, Deans

- Functions:
  - Propose new colleges, departments, centre, etc. to be approved by the HE Council
  - Approve academic programs
  - Approve curricula, text books and teaching materials, and academic calendars
  - Approve budget allocations to departments and colleges
  - Confer degrees and honorary doctorates
  - Accept gifts &contributions to university
  - Appoint and terminate the services of faculty members and other personnel
  - Approve training sabbatical leaves, secondment, and academic missions

# The University Rector

## Main Responsibilities

- Appointed through a Royal decree for four-year renewable term, The University Rector carries on the following responsibilities:

- Acts as the Chief Academic and Executive Officer of the University and the Deputy Chairman of the University Board

- Recommends appointments of Vice-Rectors and Deans

- Appoints Deputy Deans and Department Chairmen for two year renewable terms

- Approves resolutions proposed by the University Scientific Council and standing committees.

- Accessible by the whole community and handles issues of varying importance.

# Academic Colleges and Departments

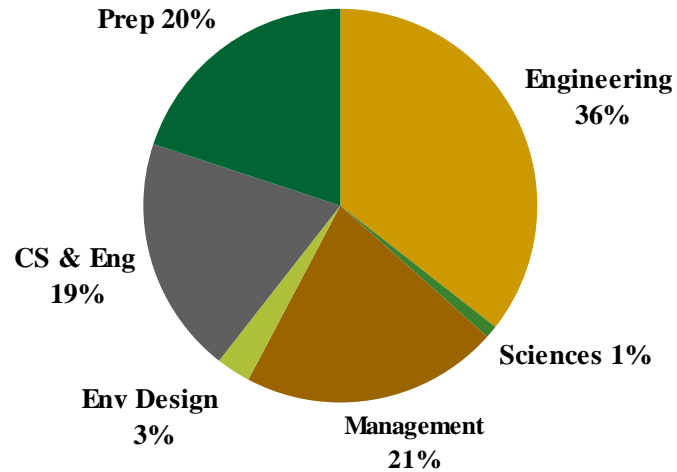| Colleges of Engineering Sciences & Applied Eng. | College of Sciences | College of Industrial Management | College of Environmental Design | College of Computer Sciences and Engineering | Community Colleges |
|---|---|---|---|---|---|
| • Aerospace<br>• Civil<br>• Chemical<br>• Electrical<br>• Mechanical<br>• Petroleum | • Chemistry<br>• Physics<br>• Mathematical Sciences<br>• Earth Sciences<br>• Islamic & Arabic Studies | • Accounting<br>• MIS<br>• Finance & Economics<br>• Management<br>• Marketing | • Architecture<br>• Architectural Engineering<br>• Construction Eng. & Mangt.<br>• City & Regional Planning | • Computer Sciences<br>• Computer Eng.<br>• Systems Eng.<br>• Software Eng. | • Dammam Community College<br>• Hafr Al-Batin Community College |

**Programs are periodically revised**
**30 BS Programs, 24 offer master degrees, and 10 offer doctorate degrees**

# Enrollment
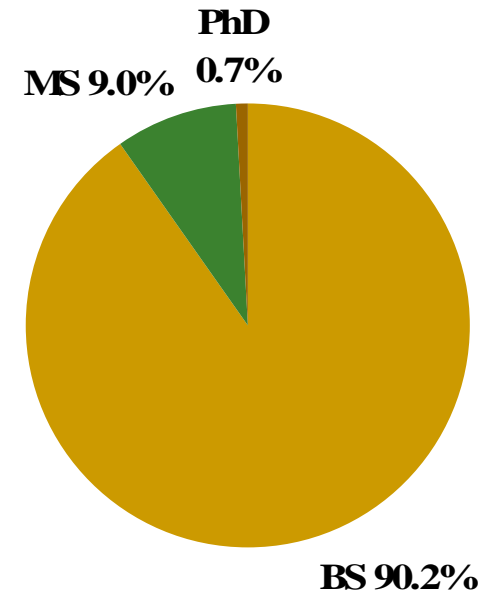
## Undergraduate Enrollment (2005/2006)



Prep 20%

Engineering 36%

CS & Eng 19%

Env Design 3%

Management 21%

Sciences 1%

**Total undergraduate students: 7,395**

## Student Enrollment by Degree (2005/2006)



PhD 0.7%

MS 9.0%

BS 90.2%

# Accreditation/Assessment

| Year | Accreditation/Assessment | KFUPM Programs | Status |
|------|--------------------------|----------------|--------|
| **1993** | **(ABET)** | All Engineering programs | Received "substantial equivalence" until 2001 |
| **1996** | Berkeley Team | All Sciences programs | |
| **1997** | **(UNESCO)** | Research Institute | |
| **2001** | **(ABET)** | All Engineering Science programs | Received "substantial equivalence" until 2008 |
| **2002** | Association to Advance Collegiate Schools of Business **(AACSB)** | C. of Industrial Management | Received accreditation until 2013 |
| **2003** | **(ABET)** | All Applied Engineering programs | |
| **2003** | Self-Assessment **(7 Programs)** | Program Assessment, Deanship of Academic Development | Received advice to prepare for upcoming accreditation |
| **2005** | Self-Assessment **(11 Programs)** | Program Assessment, Deanship of Academic Development | Received advice to prepare for upcoming accreditation |

# KFUPM Highlights

## Features & Highlights

- English is the medium of instruction

- KFUPM alumni hold leading positions within government and industry

- KFUPM has the most active academic development programs in the region
  - Faculty development
  - E-learning
  - Assessment & Accreditation

- Personal skills program is initiated to enhance students employability skills

# KFUPM Highlights

## Features & Highlights

- Implemented an ERP system

- Established an endowment fund

- Developed a comprehensive strategic plan

- Pioneered in the adoption of the International Advisory Board

- Leadership role in adoption of:
  - National Assessment and Evaluation Center
  - Preparatory year program
  - Coop program
  - Career day

- Entrusted to develop the strategic plan for higher education in the Kingdom for the next 25 years (AAFAQ project)

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# KFUPM's Five Strategic Directions

| **1** Excellence in Education | **2** Excellence in Research | **3** University Standing & Reputation | **4** University's Competitive Edge | **5** Services to Society & Community |

- Identify, attract and retain world class faculty

- Establish faculty exchange programs

- Diversify student population and establish exchange programs

- Create educational programs that are linked to centers of excellence

# KFUPM's Five Strategic Directions

| 1 Excellence in Education | 2 Excellence in Research | 3 University Standing & Reputation | 4 University's Competitive Edge | 5 Services to Society & Community |

- Develop joint research programs with leading technical universities

- Promote and reward collaborative research, particularly that with commercial applications

- Create research linkages with the R&D labs of multinational corporations

- Align research with the international directions and trends

# KFUPM's Five Strategic Directions

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| Excellence in Education | Excellence in Research | University Standing & Reputation | University's Competitive Edge | Services to Society & Community |

- Establishment of international advisory board

- Create alliance or sisterhood programs with the leading US and European universities

- Target University's publications in leading journals

- Hold/sponsor international conferences/workshops, and invite distinguished scholars at KFUPM

# KFUPM's Five Strategic Directions

| 1 Excellence in Education | 2 Excellence in Research | 3 University Standing & Reputation | 4 University's Competitive Edge | 5 Services to Society & Community |

- Establish leadership in:

- Oil and Gas
- Refining and Petrochemicals
- Renewable Energy
- Water
- Nanotechnology

- Transform KFUPM into a global innovation hub in the selected areas by building a critical mass of researchers and research infrastructure

- Diversify sources of funding

# KFUPM's Five Strategic Directions

**1** Excellence in Education

**2** Excellence in Research

**3** University Standing & Reputation

**4** University's Competitive Edge

**5** Services to Society & Community

- Network and capitalize on KFUPM alumni

- Improve KFUPM internal community

- Establish strong interaction with external community

- Become more proactive in providing services that are of value to the society

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| Ranking in Engineering Publications (March 1st 2007) | | |
|---|---|---|
| ESI Rank | No. Papers Cited | Institution |
| 9 | 4469 | NASA |
| 11 | 4397 | MIT |
| 93 | 1591 | Johns Hopkins University |
| **111** | **1,503** | **KFUPM** |
| 157 | 1192 | University of Massachusetts |
| 215 | 935 | Istanbul Technical University |
| 243 | 868 | Cairo University |

Source: ISI ranking by number of engineering publications on 1 March 2007, 1997 – 2007
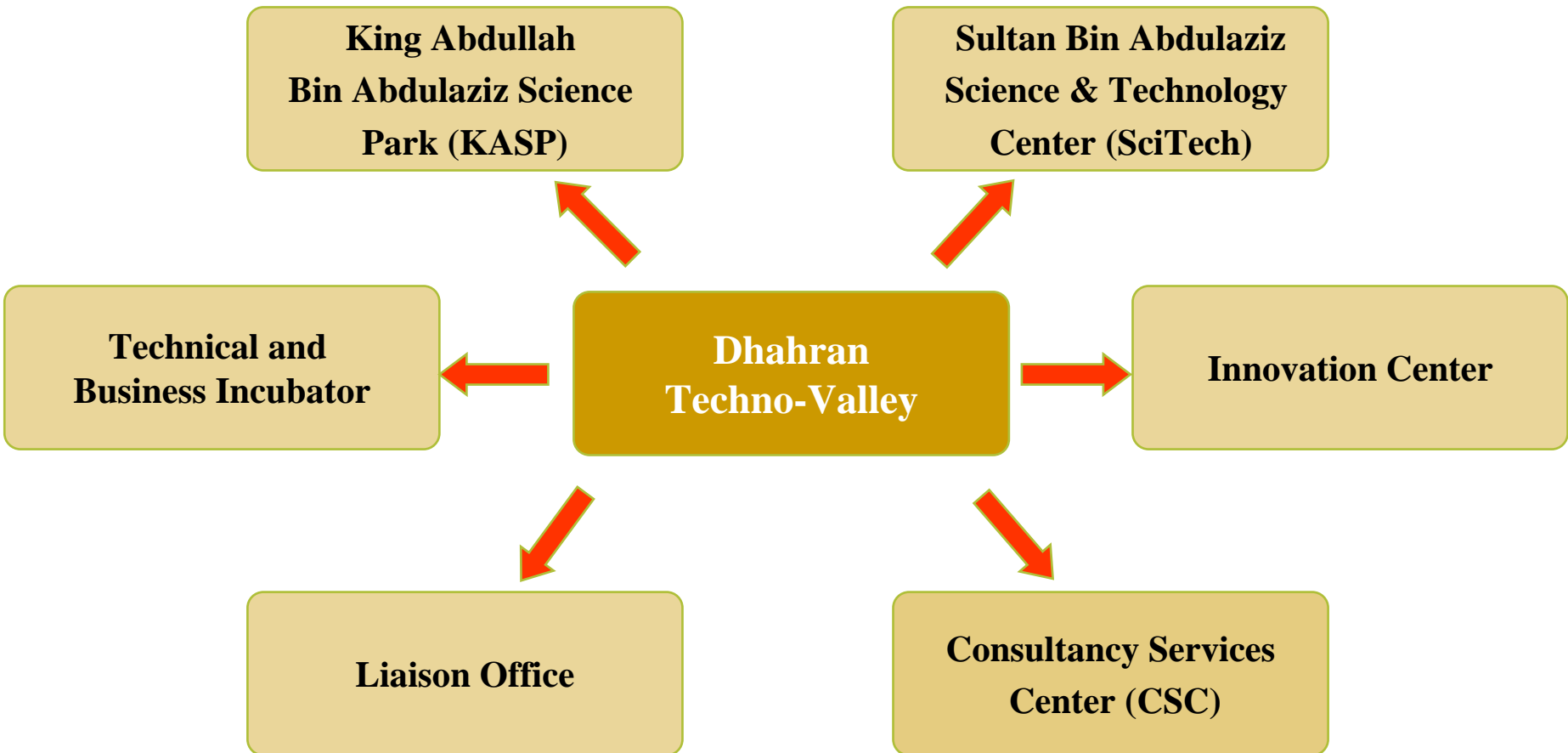
ESI: Essential Science Indicator

Dhahran Techno-Valley

Strategic Areas of Excellence

International Partnership Program

# Dhahran Techno-Valley Divisions



King Abdullah Bin Abdulaziz Science Park (KASP)

Sultan Bin Abdulaziz Science & Technology Center (SciTech)

Technical and Business Incubator

Dhahran Techno-Valley

Innovation Center

Liaison Office

Consultancy Services Center (CSC)

## Strategic Areas of Excellence

**Nanotechnology**

- HM The King has donated **$3.2 MM** for the development of a center of excellence in Nanotechnology

**Renewable Energy**

- The government has allocated **$11 MM** as startup towards this area
- KFUPM will contribute funds in the form of infrastructure and support

**Refining & Petrochemicals**

- The government has allocated **$9 MM** as startup towards this area
- KFUPM will contribute funds in the form of infrastructure and support

**Water**

- Saudi Arabia is the largest user of desalinization technology in the world
- KFUPM expects government funds to seed this area

**Upstream Oil & Gas**

- KFUPM wishes to strengthen research ties between KFUPM & Aramco
- KFUPM expects government funds to seed this area

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