

ELECTRICITY INDUSTRY AND DEVELOPMENT OF ELECTRICAL ENGINEERS IN SEC

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INTRODUCTION

Electricity today is the critical enabler of the economy and a mean to enhance the quality of life.

Investing in our electricity supply tantamount to invest in Saudi Arabia present and future economic success.

Providing a safe, secure, reliable ,supply of electricity with competitive price is the goal of the electricity sector .

While the electricity industry consists of vast infra structure as generation ,transmission and distribution facilities, the root of this complex is the building of engineering and technical workforce.



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HISTORICAL BACKGROUND



HISTORICAL BACKGROUND

Pre Development Plans (1950s- 75)

- 100% privately owned and operated small electric companies in major cities and town.
- Mid 70s Government regulated the industry :
 - Reduced and unified the tariff all over the Kingdom.
 - Government subsidy for operation.
 - Government loans for capital projects.
 - inability to meet the high demand .

HISTORICAL BACKGROUND CONT



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- **First Sector Restructure(1976).**
 - Creation of four consolidated electric companies (SCECOS)
 - Creation of Electricity corporation.
 - Six small private companies remain in the north.
 - Tariff continues below cost .
 - Government subsidy partially paid .
 - Unable to build the required infrastructure.

HISTORICAL BACKGROUND CONT



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- **Second sector restructure (1999):**
- **Creation of Saudi Electricity company (SEC).**
- **No government subsidy.**
- **New tariff approved to cover the cost .**
- **Securing financial and operational needs using it's own resources.**
- **Improving operations performance .**
- **Open market for private sector to participate in investment in generation new capacity.**
- **Creation of a Regulatory body.**

HISTORICAL BACKGROUND CONT



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- Seven months later another resolution was issued and the tariff cut by about 33% .

TARIFF REDUCTION LOWER THE
REVENUES BY 3.5 BILLION SAUDI RIYALS
Yearly .



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SEC INHERITED CHALLENGES & IMPLICATION

SEC STARTED WITH CHALLENGES



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- **Capital Investments are required to:-**

- Meet rapid growth in demand.
- Reinforce existing assets.
- Upgrade/Replace old substations and generating units.
- Establish marginal generation reserve.

- **Tariff Structure:-**

- Does not reflect cost .
- Contains high cross subsidy.
- Not attractive to private investors.

- **Other challenges :-**

- Attract Qualified Saudi engineers and develop them.
- Excess in low educated/qualified employees.
- Deal with different cultures.



WHAT WAS THE IMPLICATIONS?

- SEC forced to concentrate on essential projects only.
- Delay reinforcement projects for existing facilities.
- Unable to replace old generating units and solve inherited problems from previous companies.
- Could not build a healthy generation reserve margin (current generation reserve margin = 1.5-2%) .
- Private sector lost interest in participating in new independent generation projects without guaranteed power purchase agreements.

Annual investment during the first 6 years was around (10 billion S.R.) while the need is 16 billion S.R.



SEC AS SEEN TODAY,,, ACHIEVEMENTS & CHALLENGES

SEC VISION AND MISSION



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Vision

- To help and improve the standards of living and enhance the economic competitiveness of Saudi Arabia
- To become a world class utility company in a future competition market.

Mission

- To provide customers with safe and reliable electricity services
- To meet the expectations of stakeholders
- To ensure optimal utilisation of available resources

Strategic Goals

- Driving capital investment in the electricity sector within the Kingdom to secure reliable supply.
- Achieve high levels of customer satisfaction
- Prepare the business units for competition market.
- Develop the company's human resource base through appropriate training
- Support research to improve performance and protect the environment

SEC OPERATING MODEL



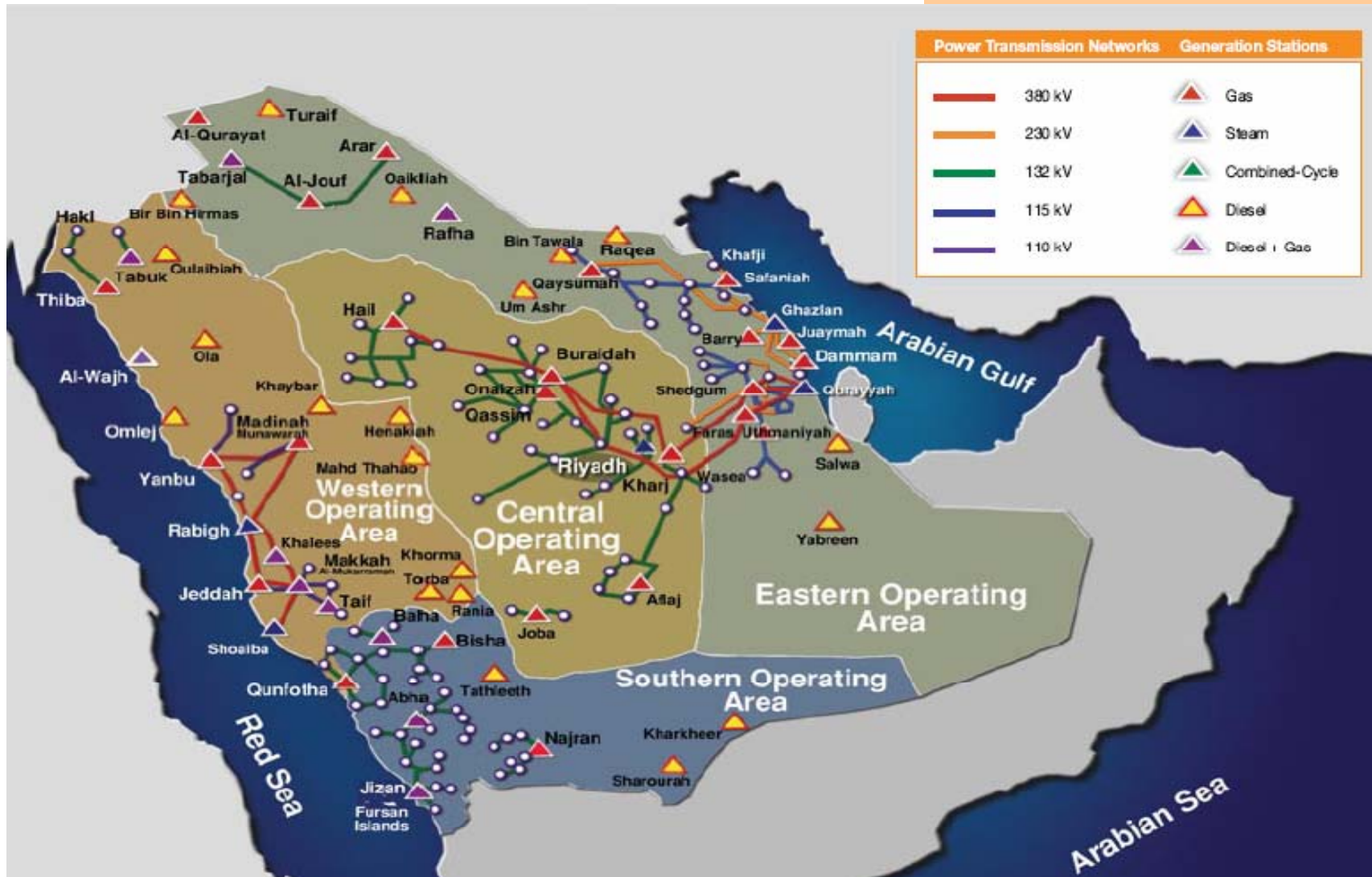
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- Incorporated under Royal Decree M/169 began operations in April 2000
- SEC is the largest electric entities in the region in terms of capacity ,market capital and shareholder's equity.
- Total assets of SR136 billion by 2007
- 74% directly owned by the Government

SCOPE OF OPERATIONS



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ACHIEVEMENTS



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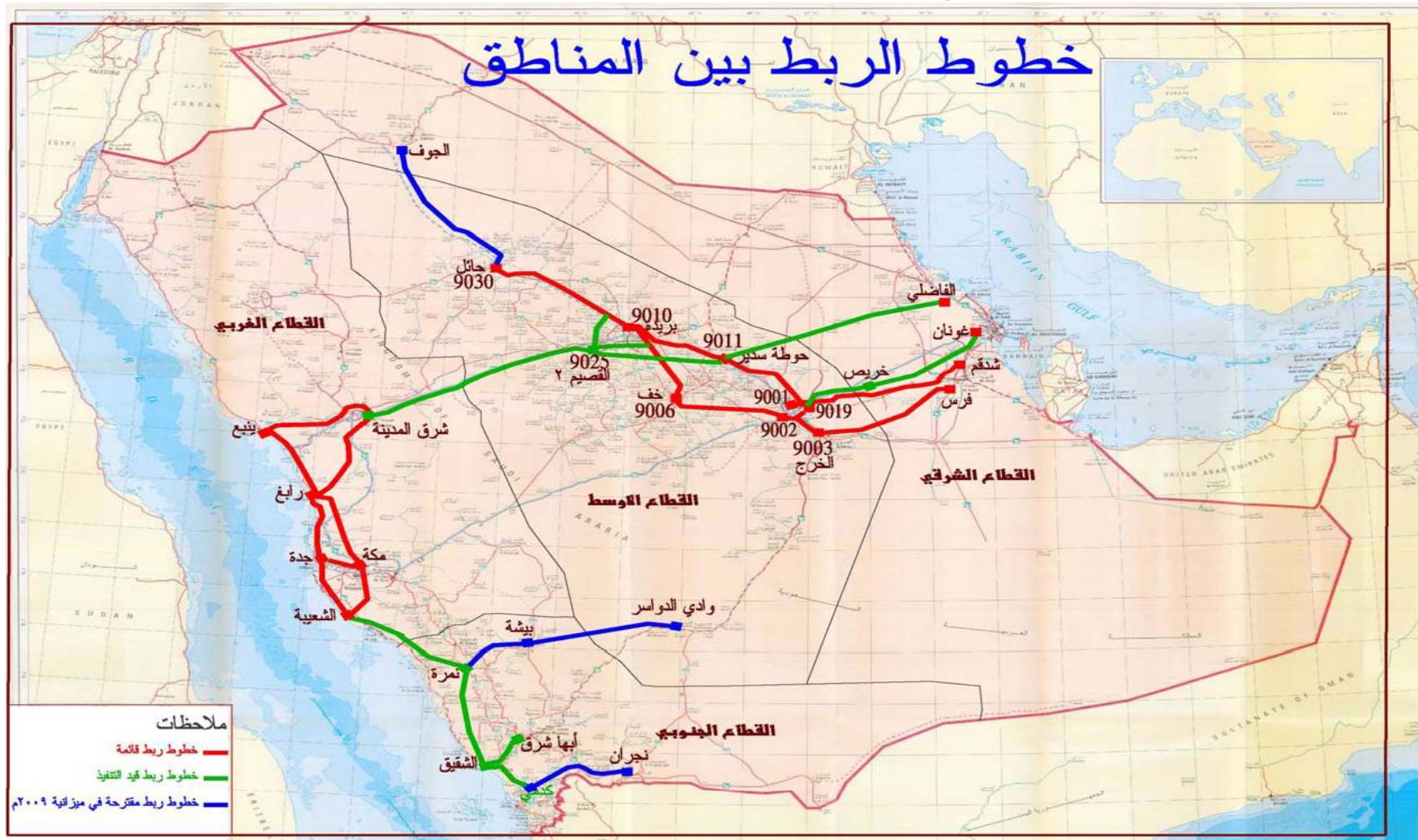
- **Between 2000-2007 significant objectives have been achieved:**

Achievement	2000	2007	Variance
Total Asset (billion)	76	136	79%
Total Shareholders Equity (billion)	26	48	85%
Power Generation Capacity (MW)	25,790	37,482	45%
Distribution Length of Lines (CKM)	226,664	329,734	45.5%
Number of Customers (million)	3,5	5,18	48%
Number of Electrified Cities, Villages and Settlements	7,600	10,953	44%
Number of Employees	31,000	28,029	(9.6%)
Saudi workforce	73%	84%	15%

NATIONAL GRID



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INDUSTRY CHALLENGES

- Sufficient Revenues to meet:
 - High annual growth in demand 7-8%.
 - Build healthy generation reserve margin(10-15%).
 - Build the national grid.
 - Reinforce existing facilities
 - Replace old generating units
 - Encourage the private sector investment.

INDUSTRY CHALLENGES



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- **Develop the electricity sector evolution . SEC support the sector evolution to reach the competition market by:**
 - **Organized as independent business units.**
 - **Separate the business units financially.**
 - **Develop Service Level Agreements.**
 - **Introduce ERP (using SAP solutions).**
 - **Perform final study for generation spin off .**

INDUSTRY CHALLENGES, CONT.



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- **BUT to have a successful restructure with a minimal risk, we should have:**
 - **Healthy Reserve Margin in generation.**
 - **Robust transmission network.**
 - **Cost reflective tariff.**
 - **No or low cross subsidy between consumers segments.**
 - **Functioning decision making process in the sector.**



Industry Challenges, Cont.

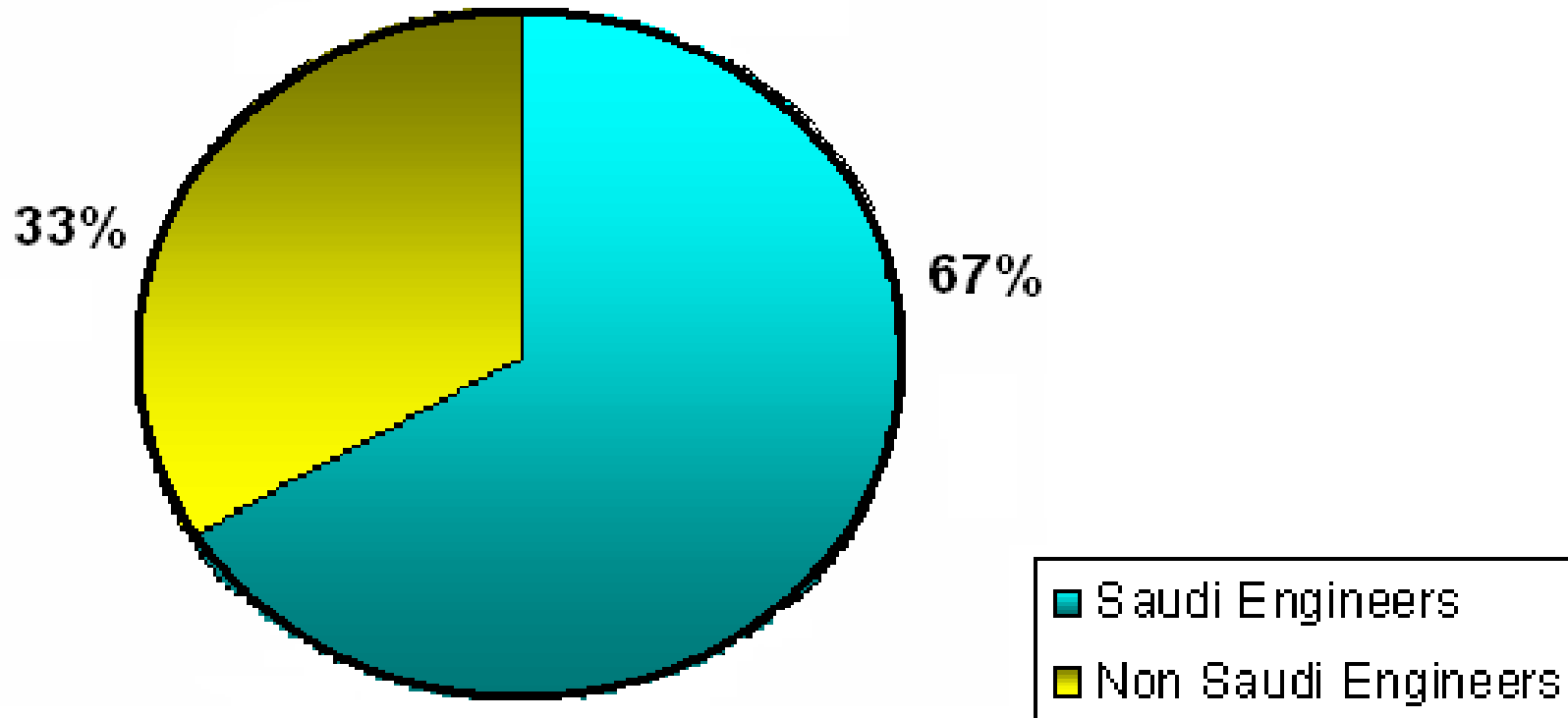
Another challenge SEC has to address is:

- **creating a competitive advantage to meet the demands of our business by identifying, selecting and developing the workforce in a way that will support the company's business goals and provide employees with clear career bath.**

SAUDI ENGINEERS AT SEC



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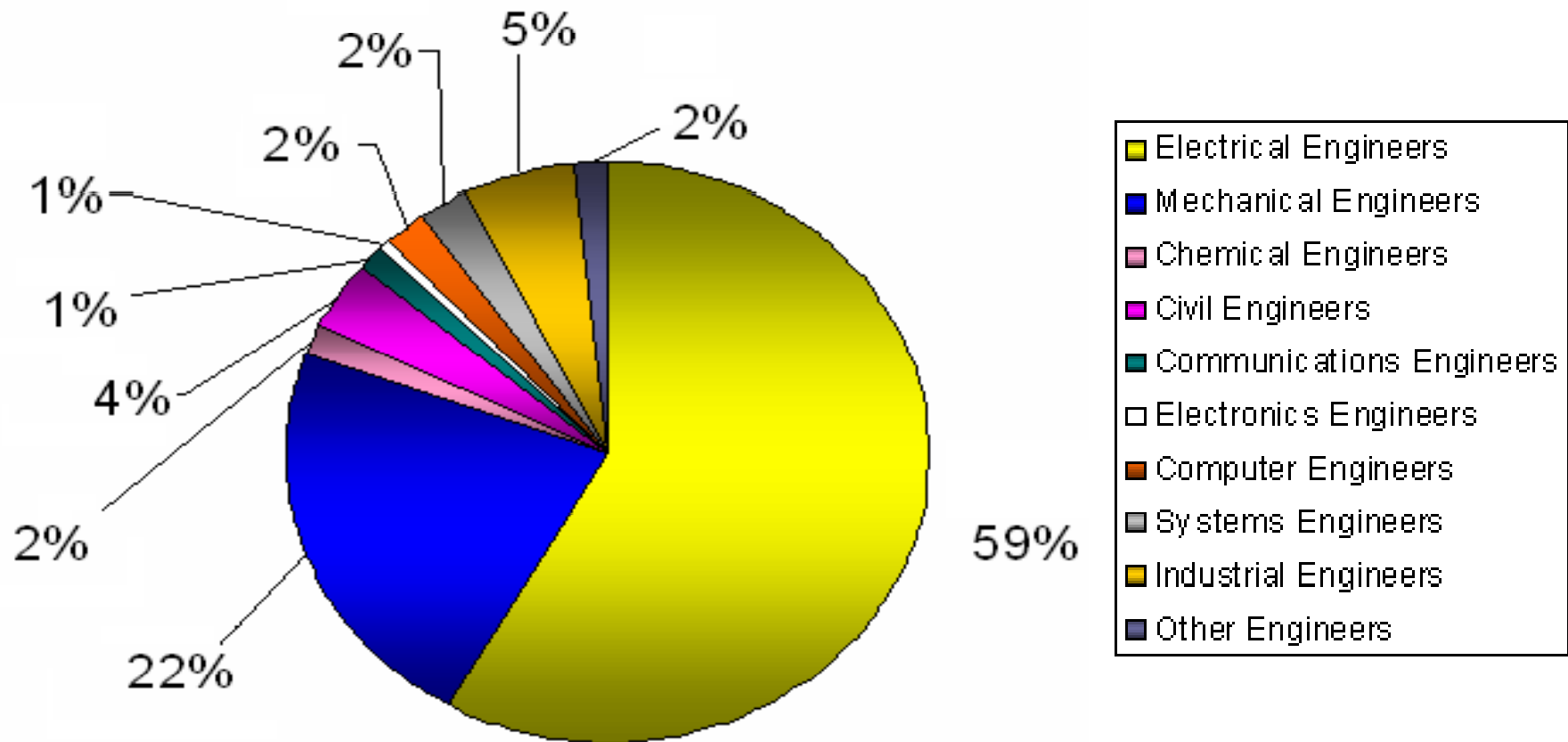


Total Number of Engineers (3972)

SAUDI ENGINEERS BY MAJOR



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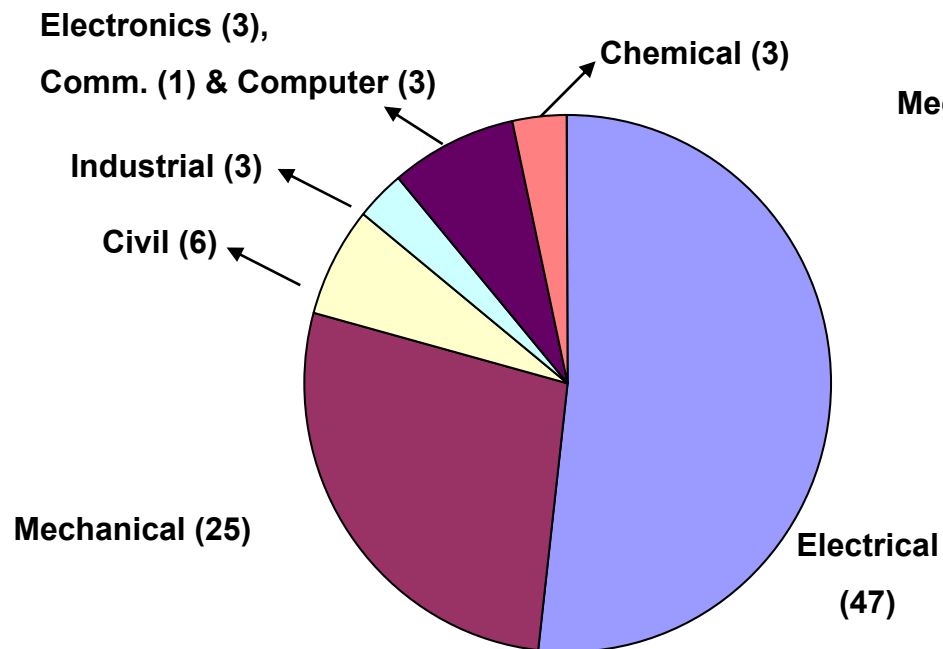


Total Number of Saudi Engineers (2644)

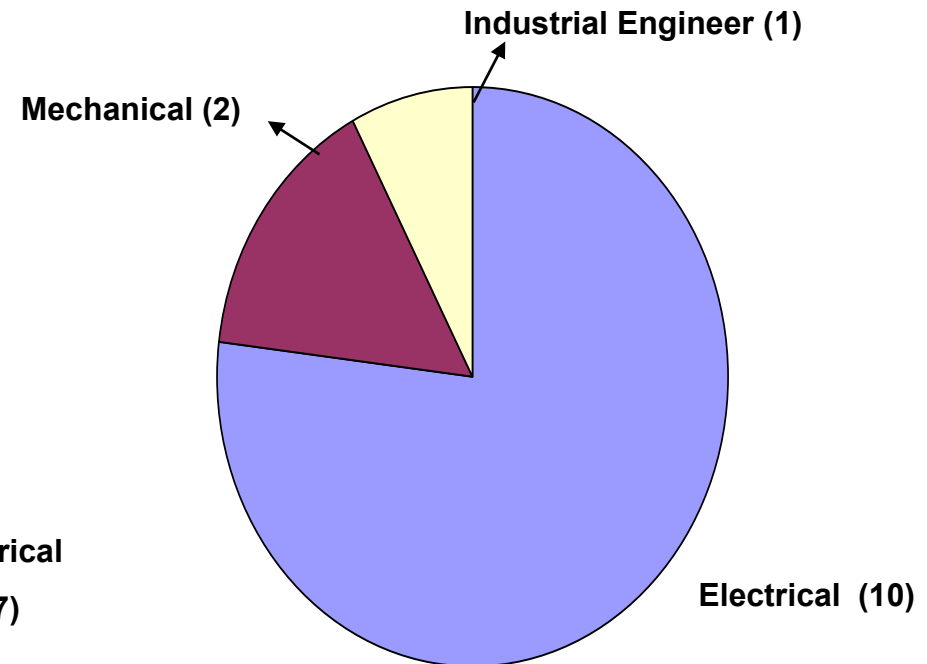


MASTER'S AND DOCTORATE DEGREES

Master's Degree Holders



Doctorate Degree Holders

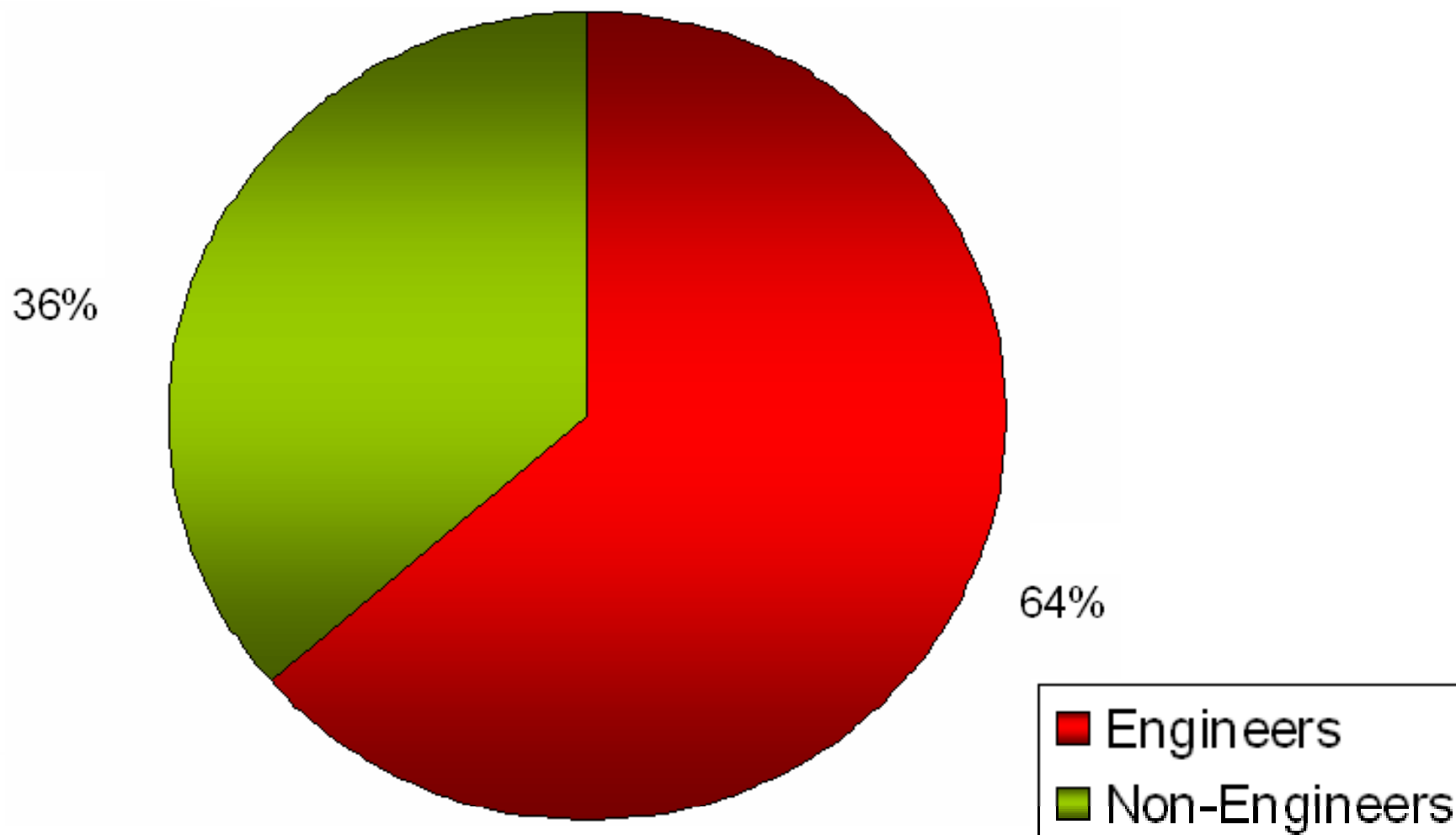


TOTAL MASTER'S AND DOCTORATE DEGREES (104)

EXECUTIVE DIRECTORS AND ABOVE

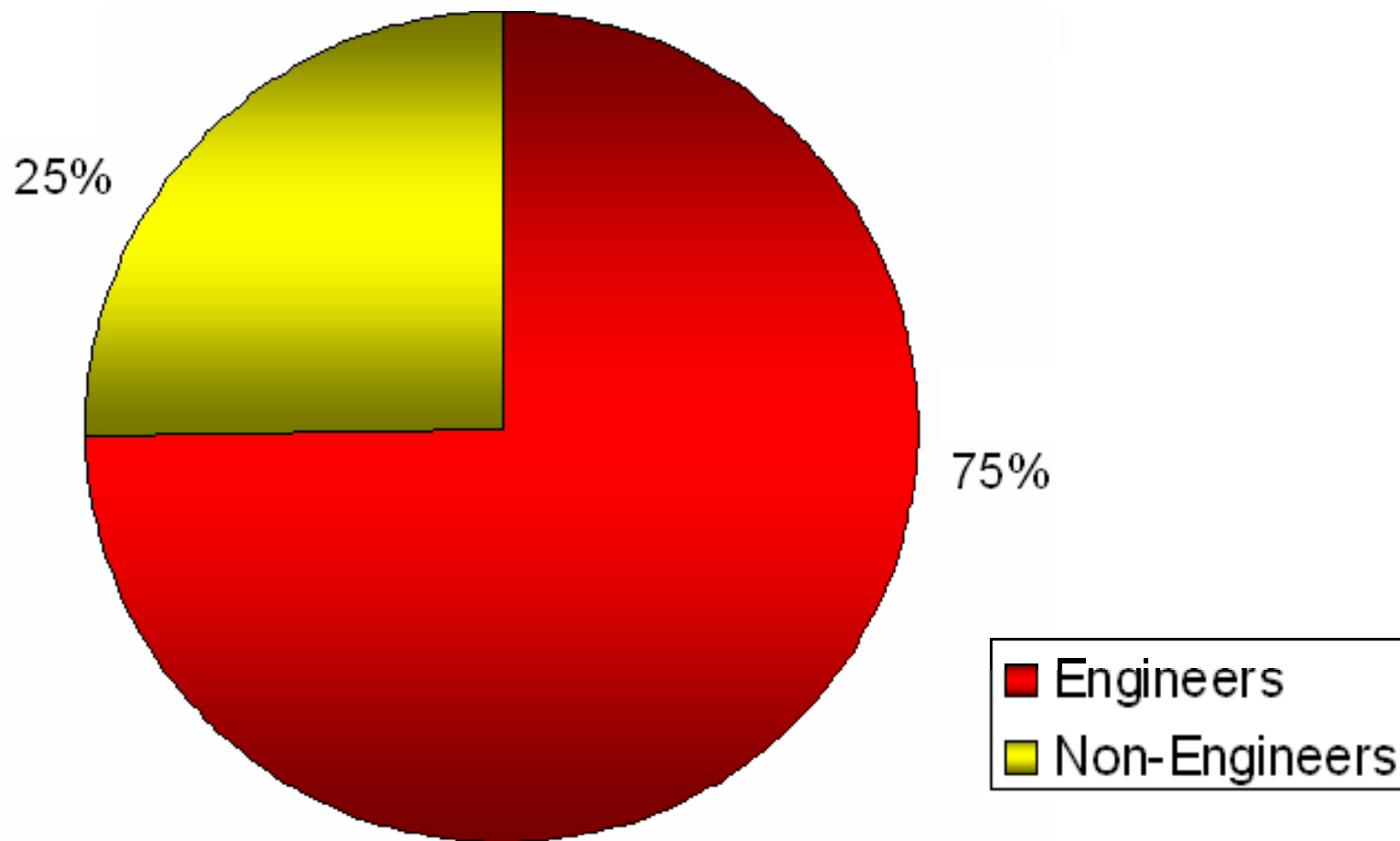


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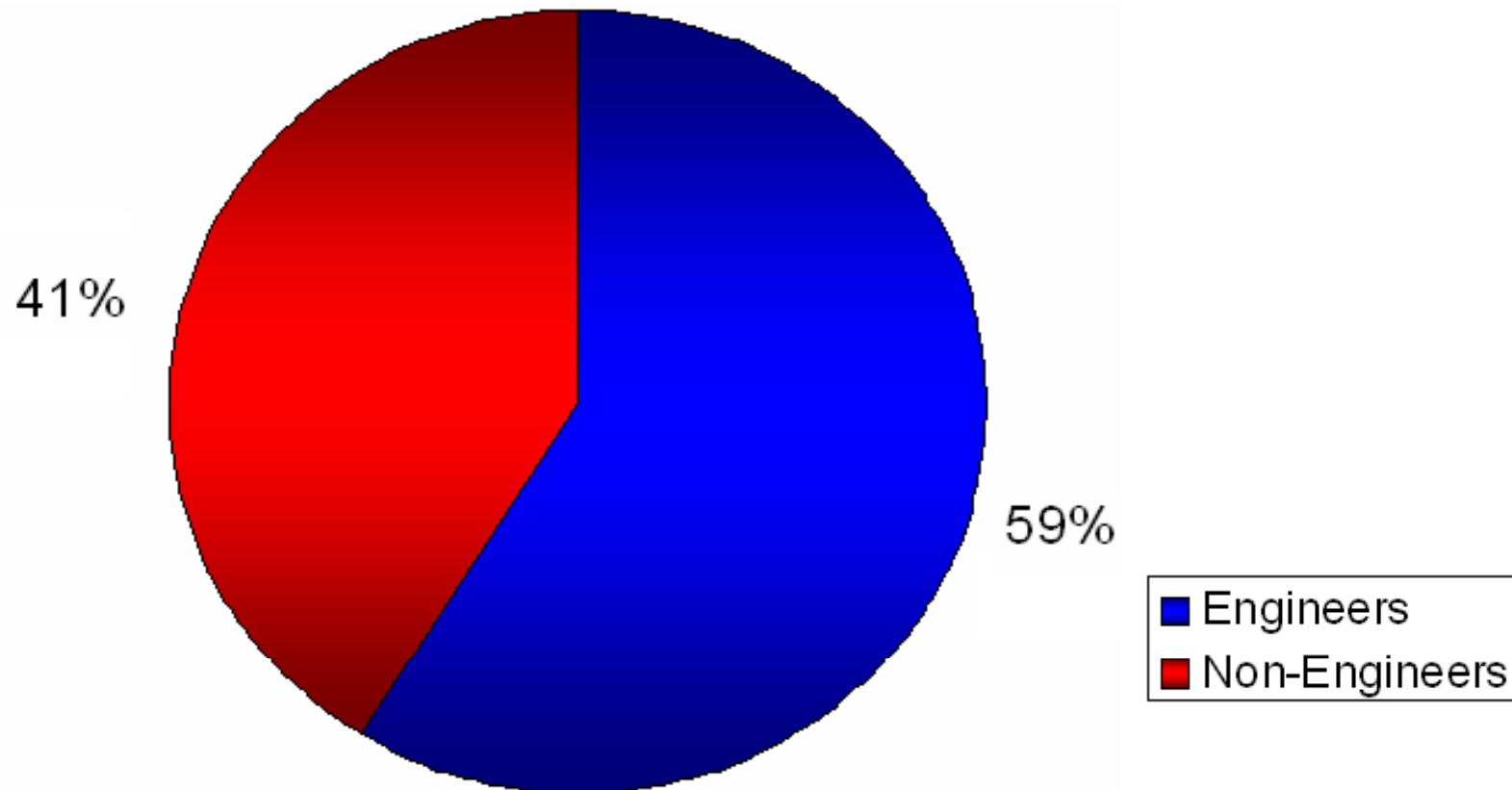
DEPARTMENT MANAGERS



DIVISION MANAGERS



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DEVELOPMENT PROGRAMS AT SEC



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1- PROFESSIONAL DEVELOPMENT PROGRAM (PDP)

A TWO-YEARS LONG INTEGRATED SET OF DEVELOPMENT ASSIGNMENTS AND TRAINING COURSES DESIGNED FOR THE NEWLY HIRED UNIVERSITY GRADUATES

2- CAREER DEVELOPMENT PROGRAM (CDP)

A SET OF JOB RELEVANT TRAINING OPPORTUNITIES TO BE OFFERED IN-HOUSE OR BY EXTERANAL PROVIDERS IN ORDER TO IMPROVE EMPLOYEES' JOB COMPETENCE AND PREPARE THEM FOR CURRENT AND FUTURE TARGET JOBS.

3- MANAGEMENT DEVELOPMENT PROGRAM (MDP)

A MANAGERIAL AND LEADERSHIP PROGRAM TO PROVIDE DEVELOPMENT OPPORTUNITIES FOR POTENTIAL SAUDI MANAGERS (DIVISION HEADS AND ABOVE)

CAREER PATH & DEVELOPMENT FOR NEW HIRED ENGINEERS



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Program of Highly Potential Employees:

Focuses on distinct employees holding Graduate degree or hold a position of first line supervision



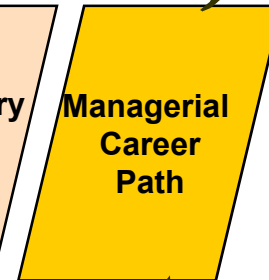
Newly Hired Engineer



Engineer C

Engineer A

Engineer B



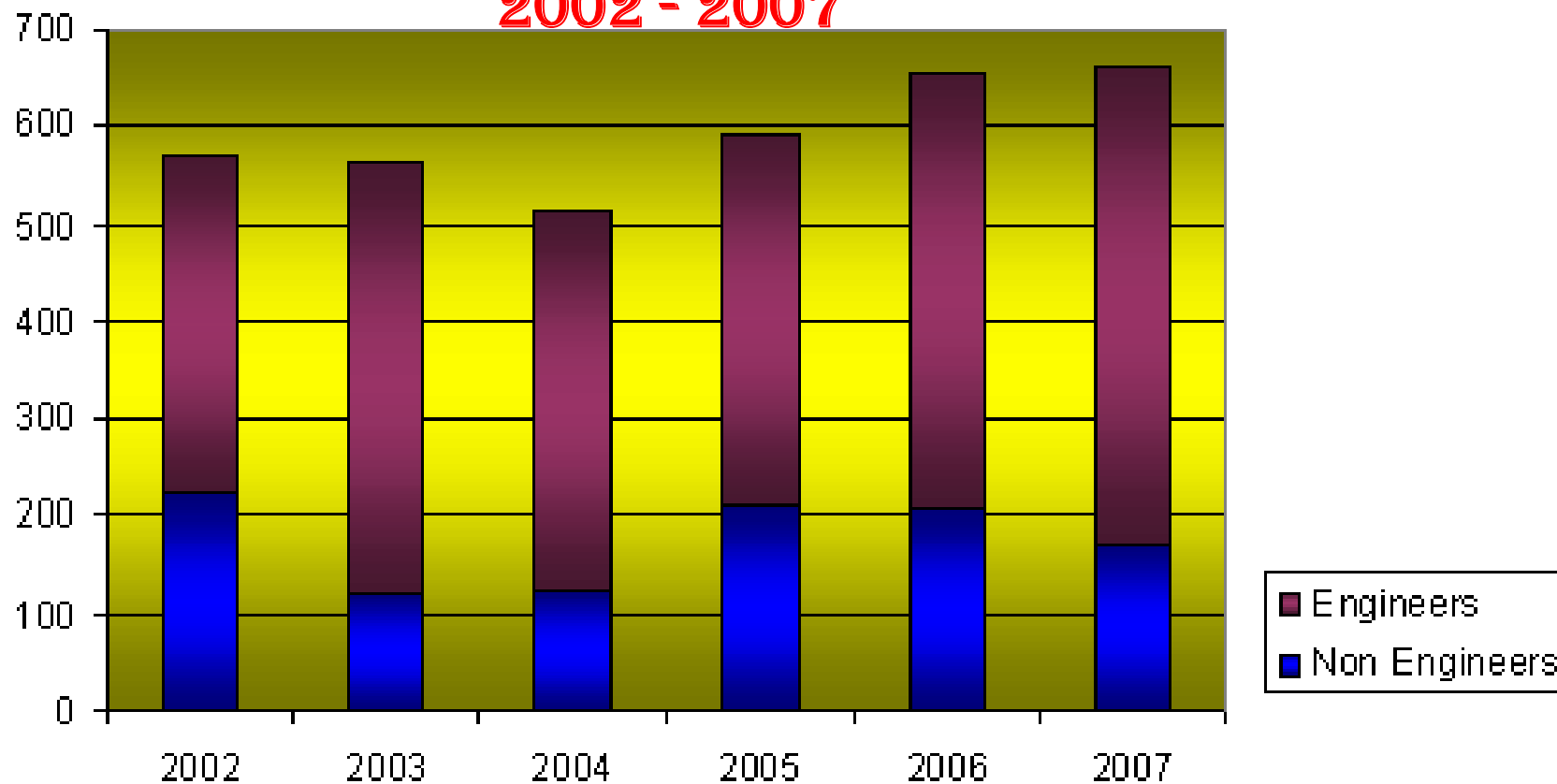
Replacement Tables

Followed By One Year Mentored Job Training

Yearly Updating



SAUDI PDP COLLEGE EMPLOYMENT HISTORY: 2002 - 2007



TECHNICAL CAREER DEVELOPMENT FOR SEC ENGINEERS



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SEC enhances knowledge and skills of its engineers in operations, maintenance, calibration, analysis, testing and troubleshooting via:

- **Short-term training programs**
- **Job rotation programs enhanced with structured On-Job-Training assignments**
- **Vendor-provided training and development programs**
- **Actual participation in the company projects**
- **Self-learning programs**



WAYS TO ATTRACT ENGINEERS TO SEC

In view of the expanding industry base in the kingdom and the increasing need for electrical engineers, SEC is compelled to adapt to new strategies (war for talent) in order to attract the engineer graduates which the company will rely on now and in the future.

In this regard, SEC is in the process of introducing a standard career path system for the newcomer engineers, to be followed by a comprehensive career management system to encompass:

- Transitioning from Technical Professional to Specialists; and**
- Transitioning from Technical Professional to leaders.**

OPPORTUNITIES FOR IMPROVEMENT



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SEC has continued to confirm the need for a new generation of engineers and had encouraged partnerships with Saudi universities to maintain focus on a strong engineering education with improved curricula and learning environments, such as:

- **Intensify research programs,**
- **Enhance and continue the Co-Op programs,**
- **Exchange visits between industry and universities.**



FINAL WORDS

- **SEC is determined to provide safe, reliable supply of electricity to the whole kingdom at a competitive price.**
- **SEC support the sector evolution .**
- **Research revealed that economic value creation in the 21st century will primarily come from the investments in the human capital.**

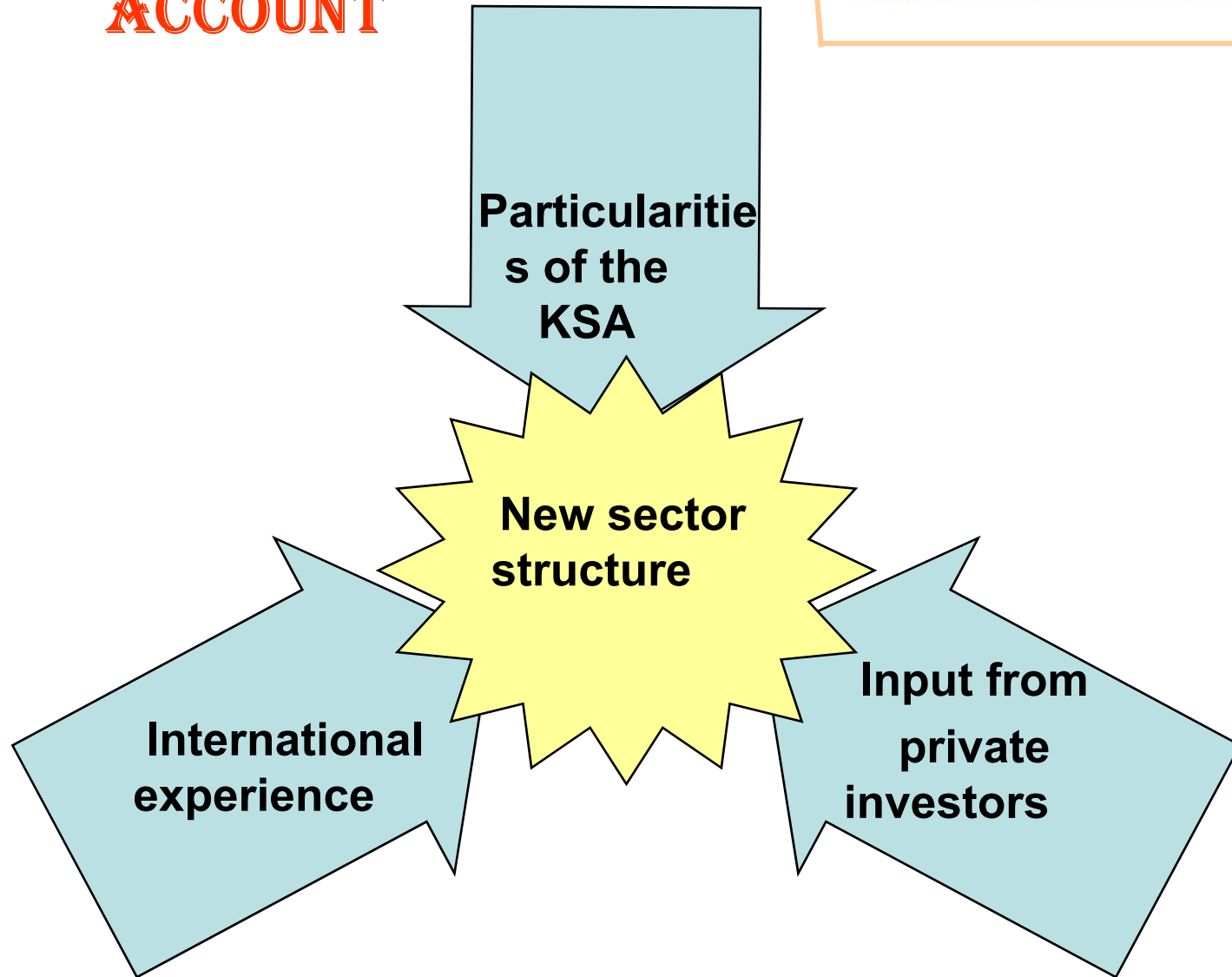


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THANK YOU

THREE INPUTS TO TAKE INTO ACCOUNT




INTERNATIONAL COMMON TRANSITION PATH FOR THE POWER SECTOR DEREGULATION



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Evolution in issues facing the power sector


Building the » network


Achieve higher efficiency


Increase customer service

Evolution in corresponding sector structure


Increase transparency


Spin-off or privatize

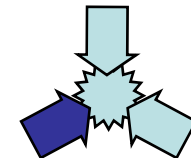

Complete deregulation

Incumbent becomes an independent and transparent entity to offer clarity on performance and attract private investors

Market is opened to private competition to further increase efficiency

Regulatory restrictions are reduced to increase competition on all levels, leading to better customer service

Current state of KSA





SEC OPERATING MODEL

- **Incorporated under Royal Decree M/169 began operations in April 2000**
- **SEC is the largest entities in the region in terms of capacity ,market capital and shareholder's equity.**
- **Total assets of SR130 bln by y/e 2007**
- **74% directly owned by the Government, with a further 6% owned by Saudi Aramco**



SEC HUMAN CAPITAL INVESTMENT

THE DEVELOPMENT OF ELECTRICAL ENGINEERS