サウディアラビア王国リヤド電子技術学院

計画打合せ調査団報告書

昭和62年 4 月

国際協力事業団
社会開発協力部

サウディアラビア王国リヤド電子技術学院

計画打合せ調査団報告書

昭和62年 4 月

国際協力事業団
社会開発協力部

はじめに

昭和４８年サウディ・アラビア国政府は，工業化推進の為の熟練及び半熟練技術労働者の需要急増に伴う人的資源開発政策を背景として，首都リヤドに新設予定の電子技術学院（ラジオ，テレビ，電気通信，電子計測の電子分野４学科）に対する協力を，わが国に要請してきた。わが国は，この要請を受け，昭和４９年１月予備調査を実施し，本学院設立の計画段階より協力することとなり昭和４９年６月協力期間３年のＲ／Ｄ署名（その後昭和５１年１０月Ｒ／Ｄ改定の際協力期間を開校までとした）を行った。なお，建物施設の整備については，「サ」側が実施することとなった。その後，「サ」側の都合（昭和５６年５月「技術教育職業訓練公社」－GOTEVOT と略称－の発足と同時に，当初の協力機関であった文部省から同公社に移管され本事業計画の練り直しの為日時を要したこと等）により建物等の建設が未着工のまま推移した。昭和５７年３月建物建設の促進を図るため「専門家チーム」を派遣したが，その後も状況の変化は見られなかった。昭和６０年８月に至り，突如，「電子技術学院」（３階建の校舎他諸施設を有し，キャンパス総面積６万㎡，総工費約１２７億円）の建設が着工され，昭和６４年７月の完工を目途に目下工事が進められている。一方，「サ」側は，上記公社発足以来口頭にて散発的に学科内容の変更を申し出ていたが，わが方は困難な旨回答していたところ，昭和６０年１月に至り新しい教育内容を取り入れた協力要請（自動制御，工業電子，医療用電子機器，コンピューター，通信，オーディオ・ビデオの電子分野６学科）を書面にて要請越してきた。

わが方は，本学院の建設着工及び教育計画の変更要請を受けて，施設と教育内容及び教育機材との間の整合性を確保し，一貫性のある計画を樹立するため昭和６１年１２月「計画打合せ調査団」を派遣する運びとなった。同調査団は「サ」国滞在中，建設状況，学科内容の確認をはじめ協力内容の大枠につき「サ」側関係者と必要な調査・協議を行った。

本報告書は，本調査団の調査，協議結果をとりまとめたものである。

本調査等の実施に関し，多大なご協力をいただいた関係各位に対し，深甚なる謝意を表する次第である。

昭和６２年４月

国際協力事業団
社会開発協力部長
山下　生比古

目　　次

はじめに

1. 計画打合せ調査団派遣 …… 1
   1.1 調査団派遣の目的 …… 1
   1.2 調査団の構成 …… 1
   1.3 派遣期間及び日程 …… 1
   1.4 主要面談者 …… 2

2. 協議の概要 …… 3
   2.1 基本構想について …… 3
   2.2 教育基本計画の見直し …… 6
   2.3 教育専門家の派遣及び受入れ研修 …… 6
   2.4 サ側関係者の日本視察について …… 6

3. 教育内容に係る調査・協議 …… 7
   3.1 技術教育職業訓練公社（GOTEVOT）表敬について …… 7
   3.2 教育基本計画について …… 7
   3.3 専門家派遣及び研修員受入れについて …… 11
   3.4 建設中の校舎視察について …… 12
   3.5 王立リヤド工業高校について …… 13

4. むすび …… 31

付属資料

1. MINUTES OF MEETING …… 35
2. CHART OF GOTEVOT …… 39
3. CHART OF VOCATIONAL SECONDARY SCHOOL FOR 660 STUDENTS …… 40
4. DEVELOPMENT OF TECHNICAL EDUCATION AND TRAINING —— GOTEVOT …… 41
5. SUMMARY OF THE FOURTH DEVELOPMENT PLAN …… 59
6. リヤド案内（昭和60年7月在サウディアラビア日本国大使館作成） …… 101

1. 計画打合せ調査団派遣

1.1 調査団派遣の目的

昭和６０年８月学校建設に着工し，事業として実現化の第一歩を踏み出したこと，又，「サ」側の要請は，当初要請（計画）が修正され６学科となっていること，及び昭和５７年３月派遣のミッション（３名の専門家チーム）以後「サ」側の事情により約４年半の空白期間が生じていること，等から我が国の協力に関し，その枠組の見直し，協力内容等の再構築をすべき時期に来ていると判断される。

以上を踏まえ，今次，計画打合せ調査団を「サ」国に派遣し，必要な調査，確認を行うと共に我が国の協力方針，枠組等に関し必要な協議を行うことを目的とする。

1.2 調査団の構成

総括	関口 修	東工学園教授
教育計画	岩本 宗治	文部省初等中等教育局職業教育課教科調査官
協力政策	塩尻 宏	外務省中近東アフリカ局中近東第二課課長補佐
教育協力	長谷川 裕恭	文部省初等中等教育局職業教育課産業教育専門官
業務調整	道下 高一	国際協力事業団社会開発協力部海外センター課

1.3 派遣期間及び日程

昭和６１年１２月１１日～昭和６１年１２月２２日

月日	曜日	行程	調査内容
12／11	木	東京発 JL493 バンコック JL475 バーレン	
～13	土	バーレン SV201 リヤド着	ＪＩＣＡ事務所長との協議日程等打合せ
14	日	リヤド	日本大使館，技術教育職業訓練公社(GOTEVOT)，王立工業高校表敬及び打合せ
15	月	〃	GOTEVOT関係者との協議
16	火	〃	〃
17	水	〃	〃 ，建設中の校舎視察
18	木	〃	GOTEVOT関係者とミニッツ案協議
19	金	〃	〃
20	土	〃	日本大使館へ報告，ミニッツ署名交換
21	日	リヤド発 SV200 バーレン CX200 香港	
～22	月	香港 CX504 東京着	

1.4 主要面談者

〔サウディアラビア側〕

1.	Mr. Mohammad S. Al−Dhalaan	Deputy Governor, General Organization of Technical Education and Vocational Training (GOTEVOT)
2.	Mr. Kassim M. N. Babour	Acting Director General of Technical Education, GOTEVOT
3.	Mr. Abdulaxix A. Al−Saif	Supervisor of Electronic, GOTEVOT
4.	Mr. Hussein I. Al−Dahlawi	Director, Royal Industrial Sec. Institute, Riyadh
5.	Mr. Ali N. Al−Atni	Head of Electronic Department, Royal Industrial Sec. Institute, Riyadh
6.	Dr. Mohammad K. Samarkandy	Advisor of GOTEVOT (Director of Media Center, King Saud University)
7.	Dr. Sami S. Al−Wakeel	Advisor of GOTEVOT (Chairman of Computer Engineering Department, King Saud University)
8.	Dr. Hamad Z. Al−Sowyegh	Advisor of GOTEVOT (Assistant Professor, King Abdul Aziz Military Academy)
9.	Mr. Mohammad Jamal Feda	Architectural Engineer, Engineering Department of GOTEVOT
10.	Mr. Tsai, Hsi−Chi	Project Manager, Ret−Ser Engineering Agency

〔日　本　側〕

1.	岡崎久彦　大使	在サウディアラビア日本国大使館
2.	渡辺　伸公　使	〃
3.	関　博之　二等書記官	〃
4.	地曳隆紀　所長	JICAサウディアラビア事務所

2. 協 議 概 要

ＧＯＴＥＶＯＴの技術教育局長カッシムバブール以下７名のサ側関係者との間で行われた，本プロジェクトに関する我がミッションの協議の要点は，以下の通りである。

2.1 基本構想について

(1) 結　　論

“医療電子機器の分野を除く５分野（ラジオ－ビディオ，工業電子機器，自動制御，電子通信，コンピューター技術）の専門教育を，学科をセパレートに立てずに，総括的に全生徒が同じように受けるような形で，３年間の中等電子技術教育を行う。”ということで，日サ双方合意に達した。（ミニッツ参照）

(2) 協議の経過

先ず，サ側要請の６学科につき，一つ一つ趣旨や教育内容について質問し，それらの概要を確認することができた。

サ側のこれら専門教育で期待していることは，総じて各分野で用いられる電子機器のメンテナンスのできる能力の育成ということであった。

特にコンピューターのメンテナンスについても，その能力の育成に大きな期待を持っていることが表明された。これに対しては，我が国における関係業務の実情を説明し理解を求めた。即ち，我が国におけるコンピューターのメンテナンスについては，レンタルの場合はいうまでもなく，買取りの場合でも導入の時点で，メーカーとの間にメンテナンス契約を結び，専らこのメンテナンスはメーカー側に依存していること。この場合メーカーにおけるメンテナンス要員は，各メーカーがそれぞれ自社独自のマニュアルを用意しており，それらのマニュアルに従って専門にメンテナンスに携っている。その技術は，コンピューター技術の基礎教育を終ったものに対して，各社内において一定期間通常１年間以上集中的な教育訓練が行われ，それを終了した後に当該業務に就くのが一般である。このようなことから，我が国におけるコンピューター教育にあっては，一般電子技術及びコンピューターに関する基礎的，基本的な技術の教育を行うのが通常であり，メンテナンスに関する教育は，中等レベル，高等レベルいずれの学校教育でも行っていないということなどである。

以上のような我が国の学校教育におけるコンピューター教育の実情については，サ側も一応の了解を示した後，更に次のような意向が表明された。即ち，サ側は，本プロジェクトにおけるコンピューター教育にあっては，そのような日本国におけるメーカーのメンテナンスマニュアルが，読んで理解できるような能力が得られるようになれば，目

的は達せられたと考えるというのである。

これについては，いささか含みのある表現ではあるが，我が方もそれで了としたのである。

また，医療電子分野についても，サ側の強い要望があったが，次のような協議の結果，サ側は本プロジェクトからこれを除外することに同意した。

即ち，前述のようにサ側は，医療電子機器のメンテナンスができる能力の育成に主眼目があるので，これは我が国の学校教育では行われていない事情を説明することで了解を求めた。

即ち，我が国では，医療電子機器についても，導入時点でメーカーとの間にメンテナンス契約を結び，専らメーカー側にこのことは依存していること。メーカーにおけるメンテナンス要員の養成については，ほぼコンピューターの場合と同様であること。

さらに医療電子機器のオペレーションについては，我が国では医学教育の一環として行われていること。即ち，オペレーターについては，我が国では厚生省の認定にかかる資格を必要とし，その教育は，大半が民間つまり各種系専門学校が行っていることなどを説明して，本プロジェクトからは除外することを求めた。

サ側も，この事情は了解し，ミニッツの原案では，具体的な理由はそえずに除外することになったのであった。

しかし，最終的にサ側での副総裁の裁下の段階で，最終的な“ミニッツ”にあるように，“我が国（日本国）における当該教育の経験がないので”という文言を入れるよう要望してきた。既に述べたように，当該教育の実績が全くないわけでもないことから，これもいささか気になる表現であるが，サ側としても，副総裁から更に上部に説明するに当って，サ側関係者の責任を問われないために，入れざるを得ない文言であろうかと推測し，併せて，この文言が決定的に我が方のマイナス点になるとも思われず，狭義の公教育では実績のないこの分野を背負いこんで，後々苦労するよりはよい筈と判断して，上記文言を入れることを了とした。

さらに，２か年の短大レベルの教育についても，本プロジェクトからは切り離し，別途協議事項とすることで双方合意に達した。

この合意に達するまでに，双方のＲ／Ｄの解釈をめぐって協議は紛糾し，一時はデッドロックに乗り上げるような事態にまでなったが，幸い，塩尻団員のアラビア語による硬軟自在なしかもスキンシップを交えての熱烈な説得によって，合意への道が開かれた。

それは次のような次第である。

先ず，我が方は，後期中等教育３か年終了後の２か年間の教育は，中等教育ではなく，明らかに短大レベルの高等教育であり，Ｒ／Ｄの枠外の問題であるから，本プロジェク

トでは取り扱いかねると述べたのに対し，サ側は，R／Dの4か年制を単に1年延長しただけであり，当然R／Dの枠内の問題だと主張する。

そこでR／Dの4か年制についての我が方の見解として，当初3か年制をベースに構想していたが，優秀な生徒のために一年延長して実質的な成果を高めるように図った結果として，4年制が出来たのであり，あくまでもこれは後期中等レベルの教育なのだと述べた。

サ側は，その1年延長を2年延長と考えて差しつかえないではないかと繰り返す。

そこで，我が方は，去る8月に発信した我が方のクェショネアに対するサ側の回答を示し，12年教育終了者を入学させる専門教育という点を取り上げ，これは我が国では短大レベルの高等教育の範疇だとし，本プロジェクトの枠外であることを主張するという具合である。双方なかなか主張して譲らず協議はデッドロックに乗り上げた観となった。

我が方としては，この短大レベルの高等教育についての諾否を，今ここで示す権能・権限は託されていないので，本ミッションの業務は限界に達した。それ故直ちに帰国するしかないといういわば勝負手を打ったのであった。

サ側は関係者の間で一時の協議が行われた後，サ側内部の事情の披歴という予想外の展開となった。

それは，サ側内部でも，短大レベルの構想が別途あり，その上さらに本プロジェクトにこの短大レベルを取り込むのは重複ではないかという意見や，よしんば重複はよしとしても，本プロジェクトに短大レベルを繰り込んだのでは，日本側をいたずらに混乱させプロジェクトの進行を阻害しかねないから，本プロジェクトから短大レベルは切り離すべきだ（これはDr. ムハンマド・サマルカンディの意見とのこと）などの意見があったのだというのである。

つまりサ側でもこのことについては関係者の間で，必ずしも意見統一が図れないまま，我々ミッションを迎えることになってしまったことが，図らずも露呈してしまったようなものである。

最終的にサ側も意見統一がなされ，本プロジェクトの円滑な進捗を図る観点から，短大レベルは一応本プロジェクトからは切り離し，別途日本側の協力を要請する旨の申し出がなされるに至った。

そこで我が方も，それが本プロジェクトの推進の上からベターな方策であるとし，短大レベルの協力については，帰国後日本政府にその旨進言し，御期待に添えるよう努力する旨の意向を示したことにより，日サ双方この問題についての合意に達することとなったのである。

結論として，冒頭に示したような，後から付加されそうになった医療電子部門や短大レベルの教育も切り離し，すっきりした形で１０年余り頓座していた本プロジェクト推進への端緒を開くことができたのであった。

2.2　教育基本計画の見直し

カリキュラム，機材，実習指導計画等の見直しないし変更に必要な基本データーを求めその提示を受けた。

2.3　教育専門家の派遣及び受入れ研修

日サ双方の考え方，要望を出し合ったが，これについては合意に至らず，両論併記の形で“ミニッツ”に記載された。（詳細は後述）

2.4　サ側関係者の日本視察について

サ側プロジェクト関係者およそ７名の早期の日本視察の要望については，日本側からの視察勧誘のためのレター発信の希望が出されたので，帰国後直ちに関係方面に伝達する旨申し述べた。

3. 教育内容に係る調査・協議

3.1 技術教育職業訓練公社（ＧＯＴＥＶＯＴ）表敬について

１２月１４日(日)，関口修団長以下５名の「サウディアラビア王国リヤド電子技術学院計画打合せ調査団」は，「技術教育職業訓練公社（ＧＯＴＥＶＯＴ）」を表敬訪問し，同公社ダーラン副総裁他，サウディ側の本プロジェクト関係者と会見した。

関口団長から，あいさつと本調査団の調査目的を述べた後，ダーラン副総裁の歓迎のあいさつがあった。副総裁は，その中でおゝむね次のような依頼を調査団に対し述べた。

「現在，建設中のサウディアラビア王国リヤド電子技術学院の設立に際し，サウディ国内において新しい技術教育の要請がある。サウディアラビアは，今，工業化推進のための熟練及び半熟練技術労働者の需要急増に伴う，人的資源開発政策が最も必要とされていることから，今回の日本側調査団との協議において，次のような内容を検討していただきたい。

①短大レベルを含めた同学院の設立，②同学院の電子に関する学科の構成について，③それぞれの教育課程の在り方，④必要な施設と設備，⑤指導者の養成などについて，電子工業分野において発展著しい日本の指導をいただきたい。

さらに，今後の対応について日本側調査団との合意に達した点についての記録を作成していただければ幸いである。」

3.2 教育基本計画について

今回の調査の主要な目的であるリヤド電子技術学院の教育基本計画について，日本側調査団とＧＯＴＥＶＯＴの技術教育局長（Acting Director General of Technical Education）であるバブール氏（本プロジェクトのサウディ側責任者）を中心とするＧＯＴＥＶＯＴ関係者との間での協議内容は，次のとおりである。

(1) 新たに提案された学科内容の確認

日本側クェッショネアーに対する回答の中で，サウディ側から新たに提案された６学科については，次のような内容を含むものとして構想されていることが確認できた。

① Andio & Video Electronics

現在，王立リヤド工業高校で実施されている基礎電子技術の内容を改善したうえで，次のような内容に配慮していただきたいとの意向である。「ＲＡＤＩＯにＴ・Ｖ技術を加えた，総合的電子技術教育が実施できる教育課程にしたい。Ｔ・Ｖ技術教育の内容には，Video，C.C.T.V.を含み，Ｔ・Ｖ放送のミニスタジオ関係の施設・設備の導入を図ること，Language Laboratory 機器のメインテナンスもできるような技

術教育を実施したい。さらに，ディスプレイ関係の新しい技術も付け加えていただければ幸いである。」

このような分野の修理技術者の育成は，現在，サウディアラビア国内においてニーズが高いものと思われる。

② Industrial Electronics

本学科は，マイクロプロセッサを活用して制御を主とする学科と考えられる。言い換えればディジタル制御を主とする学科であり，我が国の「電子制御科」に相当する。

制御を主とする学科としては，別にAutomatic Controlが本リヤド電子技術学院において計画されている。このA.C.学科においては，メカトロニクス，油圧及び空気制御などを扱うもので，制御対象物が大きいものであり，Industrial Electronics学科は，軽くて小さい制御対象物を扱うものと考えられる。

内容としては，Microprocessors & Digital Systems, Interface & Devices, SCR Application, Regulator of Voltage & Motor Speed, Resistance Welding Control 等である。

③ Automatic Control

本学科は，Electro-Mechanical Instrument を主として扱うことから，我が国の「電子機械科」に相当する。

内容として，サウディアラビアの現状から，油圧・空気等による制御にも力点を置きたいとの意向である。

④ Telecommunications

本学科は，電気通信に関するあらゆる設備・装置を扱い，「総合的電気通信学科」としたい，とのことである。

サウディアラビアの現状から，アナログ式通信に重点を置くが，ディジィタル通信にも配慮し，さらに，サテライト，ケーブル通信にはファイバーグラスも導入し，当然回線についても扱うものとしたい，との意向である。

⑤ Computer Technology

本学科においては，ソフトウェアよりもハードウェアに重点を置き，ハードウェア修理技術者を養成したいとのことで，我が国の「情報技術科」に相当するものといえよう。

このことに関し，ＧＯＴＥＶＯＴ関係者から，日本におけるコンピュータメインテナンス教育の現状について，説明を求められた。

日本側から，「コンピュータシステムの修理については，製造会社別，機種別により方法が異なることから，日本において，プロフェッショナルな修理技術者の養成は，

企業内訓練によりなされており，学校教育においては共通性のある一般的知識・技術を身につけさせている。」と説明した。

⑥ Medical Electronic Devices

本学科において，サウディ側は，あらゆる医療用電子機器及び装置に関する修理技術者の養成を図りたい，との意向であった。

このことについて，日本側から，「医療用電子機器についての基礎的教育は，一般的な電子機器に関する教育の中に含まれるが，その専門修理技術者の養成は，学校教育としては行われておらず，医療機器製造会社の企業内教育として実施されており，また，医療電子機器の操作については，医学教育の一部として実施される。」と説明した。

サウディ側は，この学科についての日本側の協力が不可能なことを了解したが，企業内教育のプログラムに関心を示すなど，この分野における技術者養成に引き続き強い熱意をもっていることが，伺われた。

⑦ 学科内容のまとめ

サウディ側から新たに提案された学科の内容を，日本側で学科内容のまとめを行なった。学科内容のまとめは，表1のとおりである。

表1 学科内容のまとめ

分　　野	内　　容　　例
Audio & Video Electronics	Radio, T・V, Display, C.C.T.V etc.
Industrial Electronics	General Electronics, Control by Micro-Electronics, etc.
Automatic Control	Electro-Machinery, Automatic Control using Electronic, Pneumatic, Oil, etc.
Telecommunications	General Telecommunication, New Media Communication, etc.
Computer Technology	Hardware, Software, Interface, etc.

(2) 学科構成

以上のとおり，サウディ側から希望のあった新しい学科の名称とその内容についての確認を終えたが，サウディ側から，「高校段階では専門学科を置かず，一般的な電子技術教育を十分に行い，高校レベルの教育修了者を対象とする短大レベルの課程の段階から，各学科に分かれた専門教育を実施したい。」との意向が示された。

しかし，この構想について日本側から，「①従来の基本構想を大幅に変更することとなり，新たに要請された短大レベルの教育への協力の問題も含めて，日本の協力体制を再検討することが必要となる。②短大レベルに進学しない高校修了者は一般電子教育を受けるにとどまることとなり，現にある工業高校の電子科と変わらないものとなるため，新たに作る意義が乏しいのではないか。」等を述べた。

サウディ側は内部協議の上，今回調印したミニッツにある通り，「工業高校３年間においては，(1)⑥のMedical Electronic Devicesを除く５つの専門分野を全ての生徒が共通に履修するが，専門学科別には分けない。」との，新たな提案を行い，日本側調査団としても，これを了解したものである。

(3) 短大レベルの教育についてのサウディ側の意向

上記(2)の協議経過の中で，調査団は短大レベルの教育の実施は，当初より日本側の協力事項としては，含まれていないことを指摘し，サウディ側も最終的にはこれを了解した。

しかし，上述のとおり，サウディ側では短大レベルの教育の実施について，強い熱意をもっていることが明らかとなったため，調査団としてはその意向を国内関係機関に伝達することを約した。

４９年のＲ／Ｄ当時と比べ，サウディ国内の教育システムが格段の充実を遂げていること，同国の急速な近代化の進展から，電子技術分野についての人材養成の必要が，質的にも高まっていると考えられること等から，短大レベルの教育をこのプロジェクトの中で合わせて実施したいとの，サウディ側の意向も十分理解できるものである。

(4) 生徒定員及び授業時数等

① 生徒定員計画

表２　リヤド電子技術学院生徒定員計画

	高校			短大レベル（参考）	
	１年	２年	３年	１年	２年
開校時	２４０	—	—	１００	—
２年目	２４０	２２０	—	１００	１００
完成時	２４０	２２０	２００	１００	１００

上記の定員は，完成時，高校総定員６６０名とするサウディ側の計画である。

なお，上級学年に進むにつれて定員が減少しているが，これは，サウディアラビアの高校教育では，一般的に一割程度が進級できずに学校を離れることによるものである。

② 授業時数等

入学生は，サウディアラビア教育制度における9学年終了者，又は，同等の能力を有する生徒を受け入れることとしている，修業年限は3年である。

1学年は2学期制であり，1学期は15週間で構成され，15週間の中に1週間のテスト週間が含まれる。

また，1週間は5日であり，木・金曜日の両日は休日である。授業は，1日に8時限であり，1時限は45分授業である。

③ 1週間の時間配分

建設中のリヤド電子技術学院における，普通教科，実習といわゆる座学の時間配分等を計画するうえでの参考例として，リヤド工業高校の1週間の時間配分表を，表3のとおり示す。サウディ国内の他の工業高校もほぼ同様である。

なお，リヤド電子技術学院においては，表3に示す1週間の時間配分にとらわれる必要はなく，普通教科の授業時数を減じて専門教科に振り替えることもできる。ただし，宗教（イスラム教）とアラビア語は必修である。とのGOTEVOT関係者の説明があった。

表3 1週間の時間配分表（リヤド工業高校）

	普通教科	専門教科		計
		座学	実習	
1学年	14	10	16	40h
2学年	13	11	16	40h
3学年	12	12	16	40h

3.3 専門家派遣及び研修員受入れについて

調査団とGOTEVOTの関係者は，日本人専門家の派遣とサウディ人研修員の受入れについて協議した。

その内容は，ミニッツの第1項及び第7項のとおりであるが，ここでは，日本人専門家の派遣とサウディ人研修員の受入れについての留意点をあげる。

(1) 日本人専門家の派遣

① チーフアドバイザ 1名については，本プロジェクトを円滑に進めるために，できうる限り早い時期の派遣が必要であると思われる。

なお，サウディ側は短大レベルの教育内容についても精通した専門家の派遣を希望し

ていることに留意する必要がある。

② コーディネータ　1名については，高校レベルの一般電子技術教育の専門家が適当であり，教育課程を作成し，年間指導計画をたてながら，施設・設備の導入の指導をする必要があると思われる。

③ 5つの専門分野については，短期の専門家派遣を行うこととなるが，サウディ側では，短大レベルの実習指導等も計画できる専門家の派遣を希望していることに留意する必要がある。

(2) 研修員の受入れ

サウディ側の計画によると，日本での研修員は，実習の指導をするインストラクタ予定者であり，高校レベルの一般電子技術のみならず，短大レベルの指導ができる人材に育成したい意向である。また，研修員として，現在工業高校で教えているサウディ人経験者，及び工業高校の新卒者のうち優秀な者を日本に派遣したいとしている。

従って，日本における研修プログラムの検討に当たっては，日本の工業高校の教材の中でも進んだ内容を含める必要があること，修理技術の指導も必要であること，さらに教材を計画したり，作成したりすることのできる教育方法に関する研修も含める必要があることなどに留意する必要がある。

3.4 建設中の校舎視察について

12月17日(水)午後，調査団は建設中の王立リヤド電子技術学院を視察した。

昭和60年8月に校舎の建設工事を開始して以来，順調に進行しており，同日現在，進捗率13%である。

別添1は，王立リヤド電子技術学院の校舎配置図であり，青色の部分は着工中の建物である。

校舎は，昭和64年7月完工予定であることから，設備・機材リストの見直しや，学科構成の変更に伴い施工上の変更が必要となるかどうか，を早く知りたいとのことであった。

調査団としては，基本的に大幅に変更される部分は少ないとしながらも，若干の変更は必要であるとし，これについては，教育課程が決まり次第連絡をす

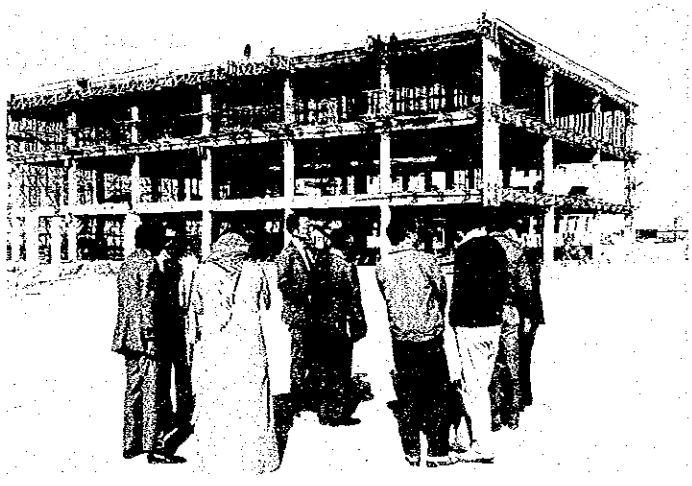


写真1　普通教室棟を背景にした調査団の視察

るものと答えている。

写真１は，建設中の王立リヤド電子技術学院の普通教室棟を背景にした，調査団の視察の様子である。

3.5　王立リヤド工業高校について

上記のＧＯＴＥＶＯＴとの協議等に先立ち，１２月１４日(日)午後，調査団は本プロジェクトに関連し，サウディアラビア王国における工業高校の教育実態を把握するために，王立リヤド工業高校を訪問した。

リヤド工業高校は，電気・電子・機械・自動車・板金等の学科で構成されているが，調査団は本プロジェクトと関連の深い電子科の施設・設備・実習指導等について視察した。

実習棟は，比較的古い建物であるが，最近改装しており整備されている。実習装置については，電子の基礎実習はイタリア製が数多く導入されており，また応用実習機器については，先進諸外国の製品が設備されるなど，サウディ製のものは一切なく，すべて諸外国からの輸入品であった。このようなことから，実習担当の教員は，装置の運転・操作，教材の作成など実習の指導に当たっての指導案作成に大へん苦労している様子であった。

王立リヤド工業高校における，電子科の専門教育内容の指導項目は，別添２のとおりである。

別添２の資料において，第３学年において実施される，T・V Systems & Closed Circuits，Industrial Electronics，Automatic Control の分野については，来年度から実施される。

実習指導の方法における特徴は，職業訓練的な指導方法を取っており，トラブルシューティングのような修理技術者養成に必要な手法をとるなど，実践的な指導方法を重視している。

写真２は，訪問した王立リヤド工業高校長ダハラウィ氏と関口団長を中心にして，同校モスク前において撮影したものである。なお，ダハラウィ校長は，ＧＯＴＥＶＯＴの関係者の一員として，本調査団との協議に終始参加した。

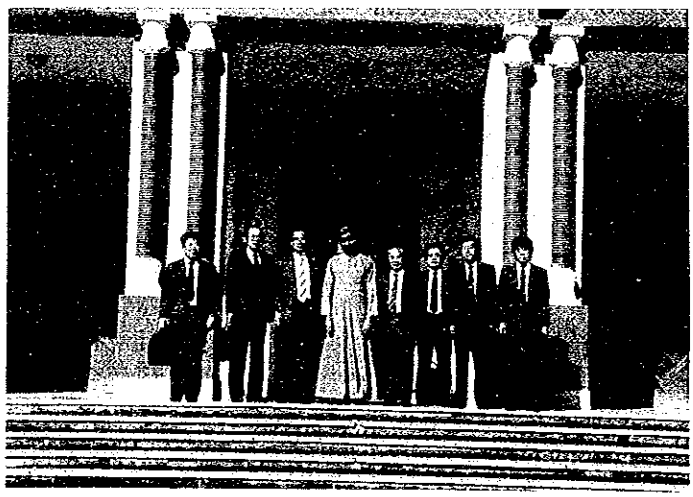
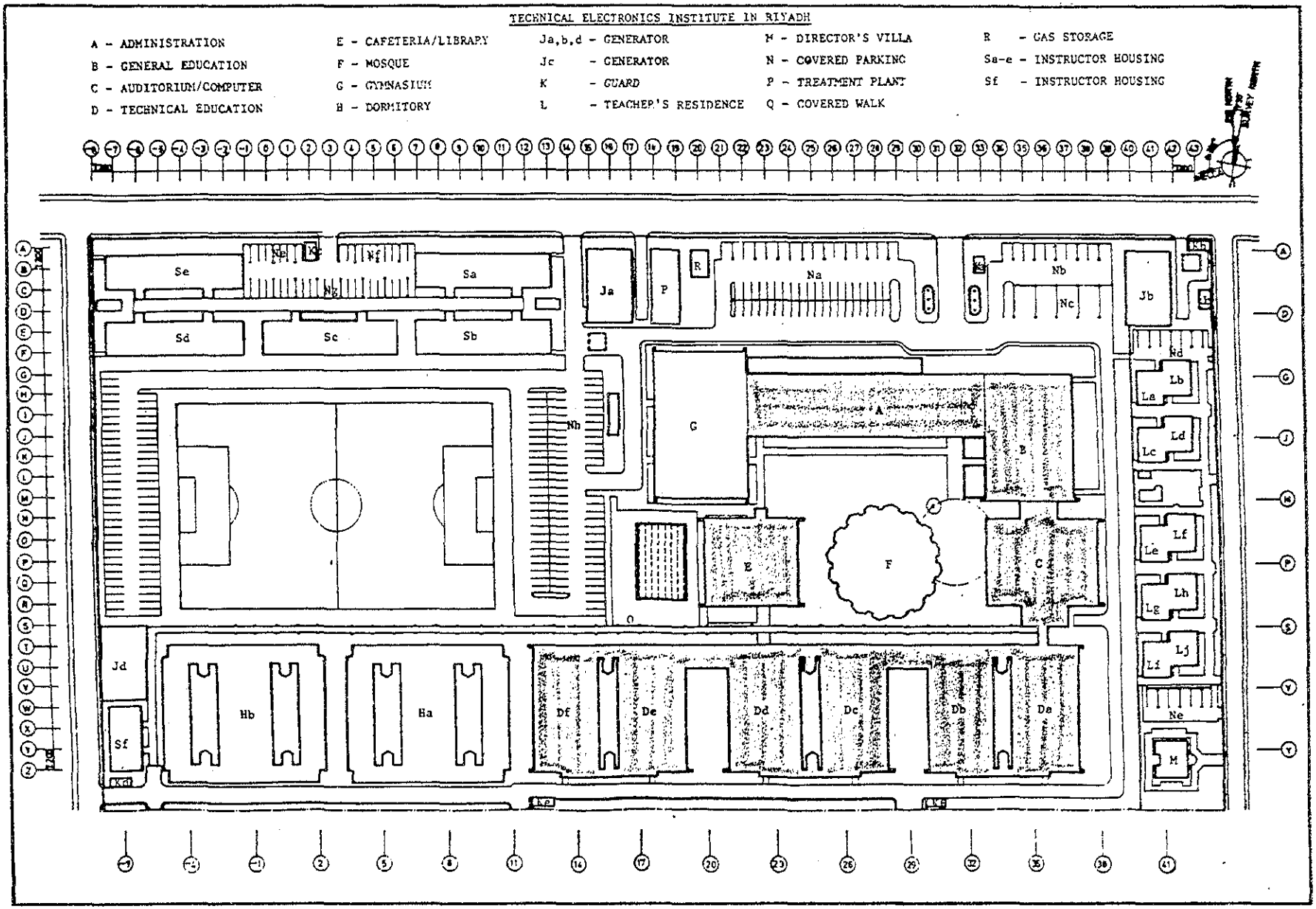


写真２　王立リヤド工業高校モスク前にて
校長ダハラウィ氏と調査団

別添１　建設中の王立リヤド電子技術学院校舎配置図

(注)　青色部分は，現在工事中の建物 Dec.12, 1986



別添２　王立リヤド工業高校電子科専門教育の指導項目

Class: First Year

Subject;　Basic Electricity and Electronics (180 Hours)

The first Term

Subject

1- ELECTROSTATICS:
- 1-1 The Atom and the molecule.
- 1-2 Principles of electiricity and electronic theory.
- 1-3 coulomb's law.
- 1-4 Electric field.
- 1-5 Conductor in electric field.
- 1-6 Potential and potential difference.
- 1-7 Capacitance -types of capacitors-connection of capacitors.

2- DIRECT CURRENT:
- 2-1 Electric current effects./ Electric circuit and its components.
- 2-2 Value and density of electric current.
- 2-3 Resistance and conductivity.
- 2-4 Electromotive force and voltage.
- 2-5 Ohm's law.
- 2-6 Connection of resistors.
- 2-7 Energy and power of electric current.
- 2-8 Kirchhoff's law.
- 2-9 Thevenin's Theory.

3-ELECTROMAGNETICS:
- 3-1 Magnetic field of a isolated straight wire carrying current.
- 3-2 Solenoid coils and electromagnet.
- 3-3 Ferro- daia- parmagnetic materials.
- 3-4 Hystresis.
- 3-5 A wire carrying current in a magnetic field.

4- ELECTROMAGNETIC INDUCTION :
- 4-1 Induced electromotive force.
- 4-2 Direction of induced e.m.f.
- 4-3 Principle of D.C. motor operation.
- 4-4 lenz's law.
- 4-5 E.m.f of self inductance and the inductance of the circuit.
- 4-6 Mutual inductance.

5- SINGLE PHASE ALTERNATING CURRENT AND A.C. CIRCUITS:
- 5-1 Generating of a.c. current.
- 5-2 Basic concepts and definitions of a.c.
- 5-3 Sinuosoidal quantities.
- 5-4 Effective value (r.m.s.) of a.c. current.
- 5-5 Average value of a.c. current.
- 5-6 A.C. circuits contain a resistsnce.
- 5-7 A.C. circuits contain an inductance
- 5-8 A.C. circuits contain a capacitance.
- 5-9 Resistance and inductive reactence in series - Voltage triangle - Z-triangle
- 5-10 Resistanse and capacitive reactance in series.
- 5-11 Resistance,inductance,and capacitance in series.
- 5-12 Power triangle.
- 5-13 Power factor.

6- RESONANCE CIRCUITS :
- 6-1 Transient response of RC circuit.
- 6-2 Transient response of RL circuit.
- 6-3 Free oscilation of resonance circuit.

6-4 Forced oscilation of resonance circuit.
6-5 Resonance of inductive coupled circuits.

7- ELECTRIC FILTERS :
7-1 The function of filters.
7-2 D.C. power supply filters.
7-3 Low pass filters.
7-4 High pass filters.
7-5 Band pass and band stop filters.

8- ELECTRICAL TRANSFORMERS :
8-1 The function of transformers.
8-2 Principles of transformer design.

The Second Term

1- INTRODUCTION TO SEMICONDUCTORS:
- 1-1 General overview of atomic theory.
- 1-2 Electrostatic forces.
- 1-3 Chemical bonds - covalent bond.
- 1-4 Crystalline structure.
- 1-5 Energy levels.
- 1-6 Conduction band.
- 1-7 Current carriers.
- 1-8 Impuritiies.
- 1-9 Semiconductor characteristics.
- 1-10 Conductivity modulation: Thermistor - Sensistor - VDR.

2- SEMICONDUCTOR DIODES:
- 2-1 p-n junction.
- 2-2 Forward bias.
- 2-3 Reverse bias.
- 2-4 Characteristic curve.
- 2-5 Zener diode.
- 2-6 Varactor diode.

3- TRANSISTORS:
- 3-1 Physical representation and Schematic representation.
- 3-2 Transistor biasing.
- 3-3 Forward current transfer.
- 3-4 Output characteristics.
- 3-5 Input characteristics.
- 7-6 Transistor configurations.

4- TRANSISTOR D.C. CIRCUITS :
- 4-1 Output circuit - algebraic solution.
- 4-2 Output circuit - graphical solution.
- 4-4 Bias stability.

5- TRANSISTOR A.C. CIRCUITS:
- 5-1 Transistor a.c. model.
- 5-2 Current amplification.
- 5-3 Voltage amplification.
- 5-4 Power amplification.
- 5-5 Output resistance.
- 5-6 Input resistance.
- 5-7 Common base circuit.
- 5-8 Emitter follower.
- 5-9 H-parameters.
- 5-10 Current amplification.
- 5-11 Voltage amplification.
- 5-12 Power amplification.
- 5-13 Input resistance.
- 5-14 Output resistance.

6- FIELD EFFECT TRANSISTOR:
- 6-1 Junction field effect transistor.
- 6-2 Metal-oxide-semiconductor field effect transistor, enhanced type.
- 6-3 Metal-oxide-semiconductor field effect transistor, depleted type.
- 6-4 Output resistance R_d.
- 6-5 Transconductance g_m.
- 6-6 D.C bias conditions.
- 6-7 Common source amplifier.
- 6-8 Common drain amplifier.
- 6-9 Common gatw amplifier.

7- UNIJUNCTION TRANSISTORS:
- 7-1 Physical characteristics.
- 7-2 Theory of operation.
- 7-3 Unijunction transistor oscilator.
- 7-4 Bistable circuit.

Class: Second Year
Subject: Electronic Circuits (210 Hours)

The First Term

Subject

1- DIODE APPLICATIONS IN ELECTRONIC CIRCUITS:
- 1-1 Characteristics of ideal diode.
- 1-2 Half wave rectifier.
- 1-3 Doide limiter circuits
- 1-4 Diode clipping circuits.
- 1-5 Voltage doubler.
- 1-6 Full wave rectifier.

2- LINEAR SMALL SIGNAL RC AMPLIFIERS:
- 2-1 Signal distortions.
- 2-2 Common emitter RC amplifier at low and middle frequencies.
- 2-3 Common emitter RC amplifier at high frequency range.
- 2-4 Frequency response curves.
- 2-5 Frequency response of common base circuit.
- 2-6 Low frequency compensation.
- 2-7 Operation of field effect transistor.
- 2-8 Feedback in amplifiers.

3- WIDE-BAND AND SELECTIVE AMPLIFIERS:
- 3-1 Bandwidth requirements for video amplifiers.
- 3-2 Bandwidth increasing using peaking coils.
- 3-3 Bandpass amplifiers.
- 3-4 Single-tuned amplifiers.
- 3-5 Double-tuned amplifiers.
- 3-6 Neutralization.

4- SINUOSOIDAL OSCILATORS:
- 4-1 Feedback requirements of oscilators.
- 4-2 Colpits oscilator.
- 4-3 Hartly oscilator.
- 4-4 Tuned collector oscilator circuit.
- 4-5 Tuned emitter oscilator circuit.
- 4-6 Piezoelectric frequency control.

5- SWITCHING AND WAVESHAPING CIRCUITS:
- 5-1 Exponential response of RC circuit.
- 5-2 Differentiator - High pass RC filter.
- 5-3 Integrator - Low pass RC filter.
- 5-4 Transistor as a switch. 5-5 Relaxaton circuits. 5-6 Blocking oscilators.
- 5-7 Astable multivibrator .
- 5-8 Monostable multivibrator.
- 5-9 Bistable multivibrator.
- 5-10 Schmitt trigger.

6- LARGE-SIGNAL POWER AMPLIFIERS:
- 6-1 Classification of operations.
- 6-2 Class A transistor power amplifier.
- 6-3 Thermal runaway.
- 6-4 Push-pull amplifier.
- 6-5 Transformerless output circuits - Complementary circuits.

7- DIRECT-COUPLED AMPLIFIERS
- 7-1 Direct-coupled amplifier problems.
- 7-2 Darlington-pair.
- 7-3 Chopping amplifiers.

8-REGULATED POWER SUPPLIES:
- 8-1 Simple power supply.
- 8-2 Series regulated power supply.
- 8-3 Parallel regulated power supply.

9- INTRODUCTION TO INTEGRATED CIRCUITS - I-C CHARACTERISTICS.

10- OPERATIONAL AMPLIFIERS:
- 10-1 Definitions.
- 10-2 Difference amplifier.
- 10-3 Simple OP amplifier.

11- INTEGRATED CIRCUITS AS BUILDING BLOCKS OF ANALOGE SYSTEMS

11-1 Linear Analog Systems:

11-1-1 Basic applications of OP:
Inverter amplifier.
Summing amplifier.
Direct current difference amplifier.
Analog differentiator and integrator.

11-1-2 Active filters:
Active low pass filter.
Active high pass filter.
Active band pass filter.

11-2 Nonlinear Analog Systems:

11-2-1 Comparators:
Zero crossing detector.
Squar wave from sinuosoidal wave.

11-2-2 Waveform generators:
Square wave generator.
Traingle wave generator
Wien bridge oscilator.

11-2-3 Regenerative comparator (Schmitt trigger).

The Second Term

Subject

12- NUMBER SYSTEMS:
- 12-1 Decimal number system.
- 12-2 Binary number system.
- 12-3 Octal number system.
- 12-4 Hexadecimal number system.
- 12-5 Number system conversion.
- 12-6 Coding.
- 12-7 Complementaries.

13- BOOLEAN ALGEBRA:
- 13-1 Sets.
- 13-2 Laws of Boolean algebra.
- 13-3 Max-terms and Min-terms.
- 13-4 Simplification of Boolean functions - Karnaugh maps.

14- LOGIC ELEMENTS:
- 14-1 OR gate.
- 14-2 AND gate.
- 14-3 NOT gate.
- 14-4 NAND gate.
- 14-5 NOR gate.
- 14-6 Exclusive-OR gate.
- 14-7 Equivalence gate.

15- INTEGRATED CIRCUITS AS BUILDING BLOCKS OF DIGITAL SYSTEMS:
- 15-1 Combinational digital systems:
  - 15-1-1 Adder.
  - 15-1-2 Comparators - applications.
  - 15-1-3 Decoder - applications.
  - 15-1-4 Multiplexer - applications.
- 15-2 Sequential digital systems:
  - 15-2-1 Bistable elements - Flip flops.
  - 15-2-2 Registers and counters - applications.

16- INTRODUCTION TO COMMUNICATION SYSTEMS:
- 16-1 Communications.
- 16-2 Communication system: information - transmitter - receiver.
- 16-3 Modulation: modulation definition - the need for modulation.
- 16-4 Noise.

17- AMPLITUDE MODULATION:
- 17-1 Theory of amplitude modulation.
- 17-2 Frequency spectrum of AM wave.
- 17-3 AM wave generation - AM circuits.

18- FREQUENCY AND PHASE MODULATION:
- 18-1 Theory of frequency modulation.
- 18-2 Frequency spectrum of FM wave.
- 18-3 FM wave generation - FM circuits.
- 18-4 Phase modulation.

19- RECEIVERS:
- 19-1 Types of Receiver:
  - 19-1-1 Tuned radio frequency receiver.
  - 19-1-2 Superheterodyne receiver.
- 19-2 AM Reciver:
  - High frequency section and its characteristics.
  - Frequency conversion and tracking.
  - Mixer - Local oscilator.
  - Intermediate frequency amplifiers.
  - Detector and automatic gain control.
  - Reciption of single side band .
- 19-3 FM Receiver:
  - Common circuits and comparison with AM receiver.
  - Amplitude limiter - FM demodulator and its types.

Class: Second Year
Subject: Electronic Devices (60 Hours)

The First Term

Subject:

1- SPECIAL PURPOSE SEMICONDUCTOR DEVICES:
- 1-1 Silicon controlled rectifier.
- 1-2 Triac.
- 1-3 Diac.
- 1-4 Silicon controlled switch.

2- PHOTOELECTRIC DEVICES:
- 2-1 Photoelectric devices classification.
- 2-2 Photo-vacuum tubes.
- 2-3 Semiconductor photodiode.
- 2-4 Phototransistor.
- 2-5 Photovoltaic cells.
- 2-6 Light emitting diodes.
- 2-7 Photocouplers.
- 2-8 Lequid crystal.

3- VACUUM TUBE DIODES:
- 3-1 Physical construction.
- 3-2 Types of emission.
- 3-3 Emitters and filaments.
- 7-4 Diode characteristics.

4- CATHODE RAY TUBES WITH ELECTROSTATIC DEFLECTION.

The Second Term

5- TRIODE TUBES :
- 5-1 Physical characteristics.
- 5-2 Operating point.
- 5-3 Characteristic curves.
- 5-4 Parameters of triode.
- 5-5 Enterelectrode capcitance.

6- TETRODE AND PENTODE TUBES.
- 6-1 Triode limitations.
- 6-2 Screen grid.
- 6-3 Supressor grid.
- 6-4 Output characteristics.
- 6-5 Pentode amplification.

7- GAS TUBES:
- 7-1 Ionization.
- 7-2 Chracteristics of cold cathode gas tubes.
- 7-3 Voltage regulators.
- 7-4 Thermonic gas tubes.
- 7-5 Thyratron.

8- ELECTROACOUSTIC DEVICES:
- 8-1 Loudspeakers.
- 8-2 Microphones.

Audio & Video Electronics Department Third Year

Subject: TV System & Closed Circuits (120 hours)

I. TV Systems

1. Image and Vision
2. Picture Analysis and Synthesizer
3. Camera Tubes
4. Picture Tubes
5. Principles of Black and White TV System
6. Principles of Color TV System - Common Principles
7. Simultaneous Color TV System - NTSC-PAL
8. Sequential Color TV System SECAM

II. Closed Circuit TV

1. CCTV System Characteristics
2. Sweep Circuits
3. Video Processing Circuit
4. Sync. Signal Generator for BSW
5. BSW Monitor Circuits
6. Operation Procedures for BSW TV Systems
7. Color Camers and Associated Circuits
8. Sync and Burst Signal Generator for Color TV
9. Chroma Decading and Associated Circuits
10. Color Monitor Circuits
11. Video Switcher Systems

see Audio Visual Ecle.

Subject: Video Tape Recording (90 H)

1. Video Recording Principles
2. Color Signal Processing - Basic Concepts
3. System without Guard Band
4. Luminance Signal Processing
5. Chrominance Signal Processing
6. Servo Mechanizm Systems
7. Mechanical Aspects
8. Control Systems
9. Sound System
10. Tuners and Modulators

Subject: TV Receivers (90H)

1. Electromagnetic Wave Propagation
2. Transmission Lines and Antenna
3. Simple Block Diagram for TV Receiver
4. The Front End (Panel)
5. I. F. Amplifiers
6. Video Detector
7. Sound Section
8. Power Supplies
9. Video Amplifiers (CRT Driving Circuits)
10. Chrominance Signal N.T.S.C
11. Chrominance Signal PAL
12. Chrominance Signal SECAM
13. Sync Separation Circuits
14. Vertical Deflection Circuits
15. Horizontal Deflection Circuits

Industrial Electronics Department — Third Year

Subject: Microprocessors and Digital Systems (90 hours)

			week
The First Term	1. An Introduction to Microprocessors:	6	1, 2
	1.1 Objectives of This Study		
	1.2 Evolution of Microprocessors		
	1.3 Organization of Microprocessor-Based Systems-Basic Concepts		
	1.4 Programming of Microprocessors-Basic Concepts		
	2. Data Representation:	6	3, 4
	2.1 Positional Number Systems		
	2.2 The Binary Number System		
	2.3 Memory Representation of Integers		
	2.4 Representation of Floating Point Numbers		
	2.5 Binary Arithmetic		
	2.6 Other Number Systems		
	2.7 Character Representation		
	3. Organization and Programming of a Microprocessor:	12	5,6,7,8
	3.1 Organization of a Microprocessor		
	3.2 Instruction Set		
	3.3 Programming the Microprocessor		
	3.4 Assembly Language Programming		
	4. Semiconductor Memories:	6	9,10
	4.1 Read Only Memories		
	4.2 Random Access Memories		
	4.3 Examples of Memories		
	5. Timing and Control:	12	11,12,13,14
	5.1 Basic Concepts		
	5.2 Instruction and Data Flow		
	5.3 System Timing Examples		
	5.4 Register Organization		

			week
The Second Term	6. Interfacing Memory and I/O Devices:	9	16,17,18
	6.1 Address Space Partitioning		
	6.2 Memory Interfacing		
	6.3 Data Transfer Schemes		
	6.4 Programmed Data Transfer		
	6.5 Direct Memory Access Data Transfer		
	6.6 Serial Data Transfer		
	7. Interfacing Devices and Peripheral Subsystems:	12	19,20,21,22
	7.1 Types of Interfacing Devices		
	7.2 Input/Output Parts		
	7.3 Programmable Peripheral Interface		
	7.4 Programmable Interrupt Controller		
	7.5 Programmable DMA Controller		
	7.6 Programmable Communications Interface		
	7.7 Analog Input Subsystems		
	7.8 Analog Output Subsystems		
	8. Applications of Microprocessors:	9	23,24,25
	8.1 A Temperature Monitoring System-Open Loop		
	8.2 Closed Loop Process Control		
	8.3 Data Acquisition Systems		
	8.4 Input/Output Device Control		
	9. Microprocessor Based System Development:	6	26,27
	9.1 Software Development Aids		
	9.2 Hardware Aids		
	10. Microprocessors with Advanced Architecture	6	28,29

Subject: Industrial Electronics(120 hours)

1 - Sensing of Time, Voltage, Light

1 - Electronic delay timer

2 - A resistance - sensitive relay

3 - A voltage - sensitive relay

4 - Reflex photoelectric relay

2 - Semiconductor Switching Devices and Applications

1 - The SCR in simple AC circuits

2 - A transistor may fire an SCR

3 - Phase control of the SCR (firing by UJT)

4 - SCR phase control by temperature or light

5 - Two-SCR rectifier with combind R and load

6 - Trial circuit

7 - Trial time - delay relay

8 - Optically coupled isolator-solid state relay SSR

3 - Gas Tubes and Application

1 - The phanotron rectifier

2 - Arc-drop, constant voltage across a vapor filled tube

3 - Glow and arc-discharge tube

4 - The voltage-regulator tube (VR)

5 - Electronic tubes or SCRs as an AC switch

6 - The IGNITRON

7 - The IGNITOR

8 - Simple IGNITRON control

9 - THYRATRON TUBES and phase control

4 - Large Current Polyphase Circuits:-

1 - Polyphase AC current

2 - Polyphase rectifiers

3 - A three - diode (three-phase half-wave) rectifier

4 - A four - diode (four phase-full wave) rectifier

5 - A six - diode (three phase-full wave) rectifier

6 - Phase shifting a polyphase rectifier

7 - Phase control of SCRs in the phase bridge

5 - Regulators of Voltage and Motor Speed

1 - A voltage compensator
2 - A solid-state DC voltage regulator
3 - The DC shunt motor
4 - Armature control and field control of motor speed
5 - Electronic control of a DC motor
6 - Full wave motor-speed regulation by SCR

6 - High Frequencies and Applications

1 - The frequency spectrum
2 - Frequency and wave length
3 - Ultrasonics
Generation of ultrasonic waves and applications
4 - Industrial electric heating of materials
5 - Induction heating of conducting materials
6 - Dielectric heating of nonconducting materials
7 - (Light and color) Infrared or heat rays
8 - Ultraviolet rays -
9 - Laser
10 - X-rays
X-rays tubes
X-rays circuits
Industrial application of x-rays

7 - Nonelectronic Devices

1 - The amplidyne
Use of amplidyne in control
2 - Constant-voltage transformer (STABILIZER)
3 - The selsyn (electric gearing)
4 - Thyrite
5 - Vibrator
6 - Strain gauge - displacement gauge
7 - Measurement of force and pressure
8 - Measurement of temperature

8 - Resistance Welding Controls

1 - Resistance welding process

2 - Types of resistance welding

3 - Electronic welding controls used in resistance welding

4 - Heat control

5 - Sequence timer

6 - Energy store welding

7 - Polyphase welding

INDUSTRIAL ELECTRONICS DEPARTMENT THIRD YEAR

Subject: Automatic Control (90H)

1 - Introduction to control systems

1 - 1 Control and control systems

1 - 2 Types of control systems

1 - 3 Feed back

1 - 4 Feed back control systems

2 - Mathematical introduction to control systems

Complex numbers

Time Domain

Frequency Domain

S field

Examples for electric circuits

3 - Block diagram

Introduction

Basics for block diagrams

Block diagram of control system using FB

Algebric rules for simplifying block diagrams

Examples for open-loop, closed loop control systems

4 - Transfer function

Definitions

Transfer function features

Transfer function for L-R-C circuit

Anology between electrical and nonelectrical quantities

5 - Sensing & decoding elements in control systems

6 - Analysis of frequency domain of control systems

7 - Regulators in control systems

Introduction

Proportional action

Integrator action

Differentiator action

P.I.D action

Lead network

Lag network

Lead.lag network

8 - Analysis of frequency domain of control systems

9 - D.C motors in control systems

10 - Servo mechanism systems

Introduction

Regulators and servo mechanism

Main parts of servo system

Amplifiers and error detectors

Transducers

Block diagram of complete servo system

Applications of servo mechanism system

Prepared by:

Engineer Abdelkader Salem

4. むすび

今回の派遣ミッションは，出荷前の事前協議での申し合せ事項のすべてとまではいかなくとも，およそ８０～９０％の成果を納めて終了帰国できたことは，甚だ幸運なことであったと思われる。

特筆すべきは，塩尻団員のアラビア語を縦横に，また硬軟自在に駆使されての説得によって，懸案のR/Dの更改も要せず，４年前からサ側から言い出されていた医療電子分野や短大レベルの教育も，本プロジェクトから切り離しての，すっきりした形で進行を促進することの端緒を開き得たことである。

ここに団員一同深甚の謝意を表する次第である。

また，在サ日本大使館の岡崎特命全権大使をはじめ，公館職員各位の熱意を込めての協力や，関係された多くの方々の御協力にも，心からの感謝の意を捧げるものである。

本プロジェクトが，目下日サ両国間の官ベースの協力事業として，トップランナーになりつつあるとも聞きおよび，今後の円滑なプロジェクトの進捗により，サ国の進展と日サ両国間の友交に大いなる寄与とならんことを念じて，本報告書のむすびとする次第である。

＜付　属　資　料＞

付属資料 1

بسم الله الرحمن الرحيم

المملكة العربية السعودية
المؤسسة العامة للتعليم الفني والتدريب المهني

الرقم .....
التاريخ .....
المشفوعات .....

MINUTES OF MEETING

With reference to the Record of Discussion dated June 12, 1974 regarding the subject of establishing a Technical Institute of Electronics in Riyadh and with reference to the communications exchanged between the General Organization of Technical Education and Vocational Training (GOTEVOT) and the Japanese side ended with the letter of Deputy Governor of GOTEVOT NO. 335/12/1, dated 16/3/1407 (18/11/1986), a Japanese team organized by the Japanese International Cooperation Agency (JICA, present responsible organization for the Project) consisting of:

1.	Mr. Osamu Sekiguchi	Professor, Nippon Institute of Technology.
2.	Mr. Muneharu Iwamoto	Supervisor of Industrial Education, Ministry of Education, Science and Culture.
3.	Mr. Hiroshi Shiojiri	Assistant Director, 2nd Middle East Division, Ministry of Foreign Affairs.
4.	Mr. Hiroyasu Hasegawa	Senior Specialist of Vocational Education, Ministry of Education, Science and Culture.
5.	Mr. Takakazu Michishita	Program Coordinator, Japan International Cooperation Agency.
6.	Mr. Hiroyuki Seki	First Secretary, Embassy of Japan in Riyadh.
7.	Mr. Takanori Jibiki	Representative of Japan International Cooperation Agency in the Kingdom of Saudi Arabia.

paid a visit to GOTEVOT in Riyadh (present responsible organization for the project) during the period from 12-04-1407H to 20-04-1407H (corresponding to 13-12-1986 to 21-12-1986). A series of meetings were held with officials and advisors of the organization.

O.S

بسم الله الرحمن الرحيم

المملكة العربية السعودية
لمؤسسة العامة للتعليم الفني والتدريب المهني

الرقم .....
التاريخ .....
المشفوعات .....

They are:

1.	Mr. Kassim M. N. Babour	Acting Director General of Technical Education (GOTEVOT).
2.	Mr. Hussein Dehlawi	Director, Royal Industrial Institute, Riyadh.
3.	Mr. Ali Al-Atani	Chairman of Electronic Department, Royal Industrial Institute, Riyadh.
4.	Dr. Mohammad K. Samarkandy	Advisor of GOTEVOT (College of Engineering, King Saud University.
5.	Dr. Hamad Z. Al-Sowyegh	Advisor of GOTEVOT,. (King Abdul Aziz Military Academy).
6.	Dr. Sami Al-Wakeel	Advisor of GOTEVOT - (College of Computer Science, King Saud University).
7.	Mr. Abdul Aziz Abdul Rahuman Al-Saif	Instructor of Electronics (GOTEVOT)

Both sides have looked over the necessary actions to be taken in order to open the Technical Institute of Electronics. Discussions covered the following points:

1. The Saudi side requested the Japanese team to dispatch to GOTEVOT within one month from the date of these Minutes, a Chief Advisor to supervise the development of curricula related to the Technical Institute of Electronics and a Project Coordinator (both capable of reading, writing and conversing in English). The Japanese team has mentioned that there was a plan in Japan to send those two personnel in October 1987. However, the Japanese team will recommend to the officials in Japan to send them as soon as possible.

2. The two sides have agreed that the student studies in the Institute should include the following five technical fields:

   1. Automatic Control
   2. Industrial Electronics
   3. Telecommunications
   4. Computer Technology
   5. Audio & Video Electronics

بسم الله الرحمن الرحيم

الرقم .....
التاريخ .....
المشفوعات .....

المملكة العربية السعودية
المؤسسة العامة للتعليم الفني والتدريب المهني

As for the field of Medical Electronic Devices mentioned in the above letter No. 335/12/1, the Japanese side explained that, no such experience exists in Japan and that, basics of education on Medical Electronic Devices are usually included in the above mentioned five technical fields and that maintenance of those devices is usually carried out by the manufacturing companies, while training on operation of those devices lies as part of Medical Education.

3. Either intermediate school graduates or their equivalents are qualified to be accepted in the Institute. The student will study for three years in the Institute and will graduate with Secondary Industrial Certificate (Majoring in Electronics).

4. The Japanese side will prepare in Japan the specific curricula in English language for the Institute, conforming with the modern technology and then will be discussed for approval by the Saudi side.

5. Once the curricula are accepted by Saudi side, the Japanese side will provide the lists of equipment and instruments, including those basic materials required for the laboratories and workshops. The contents of the above mentioned list will be discussed for the approval by the Saudi side.

6. The Japanese team was informed that the studies in the Institute will be for three years. Each year consists of two semesters of fifteen weeks per semester including the examination period, and each week consists of five school days, and each school day consists of eight class hours of forty-five minutes each.

7. The Japanese side explained that in order to teach and train technical instructors for the Institute, five scholarships will be offered annually for two consecutive years, totalling ten scholarships of one year period each. While, the Saudi side requested ten scholarships annually for two consecutive years, totalling twenty scholarships of two years period each.

8. The Saudi side clarified that the maximum capacity of the Institute is 660 students as agreed upon previously.

بسم الله الرحمن الرحيم

المملكة العربية السعودية
المؤسسة العامة للتعليم الفني والتدريب المهني

الرقم .....
التاريخ .....
المشفوعات .....

9. The Japanese side declined to discuss the subject of higher technical education of two years period for the graduates of the level of this Institute to be specialized in any one of the five previously defined fields since it was not mentioned in the Record of Discussion dated June 12, 1974.. However, the Japanese team expressed its readiness to make recommendations to the authorities concerned of the Japanese Government to take necessary steps for a favourable response to this subject.

Riyadh, the 20th day of December, 1986.

For the Japanese International Cooperation Agency

関口修

(OSAMU SEKIGUCHI)
Head of the Japanese Mutual Consultation Team

For the Organization of Technical Education and Vocational Training

(KASSIM M. N. BABOUR)
Acting Director General of Technical Education

CHART OF GOTEVOT

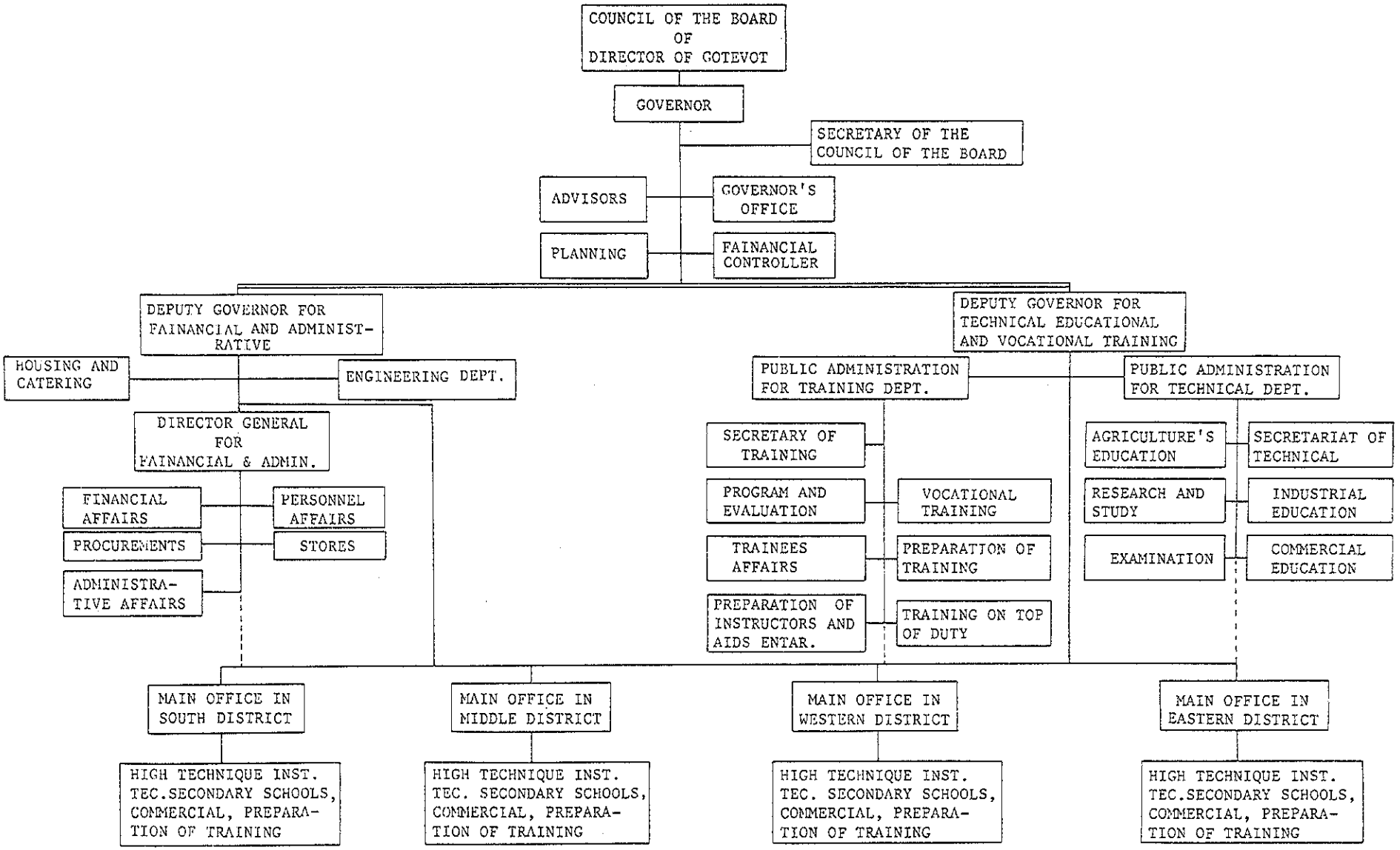
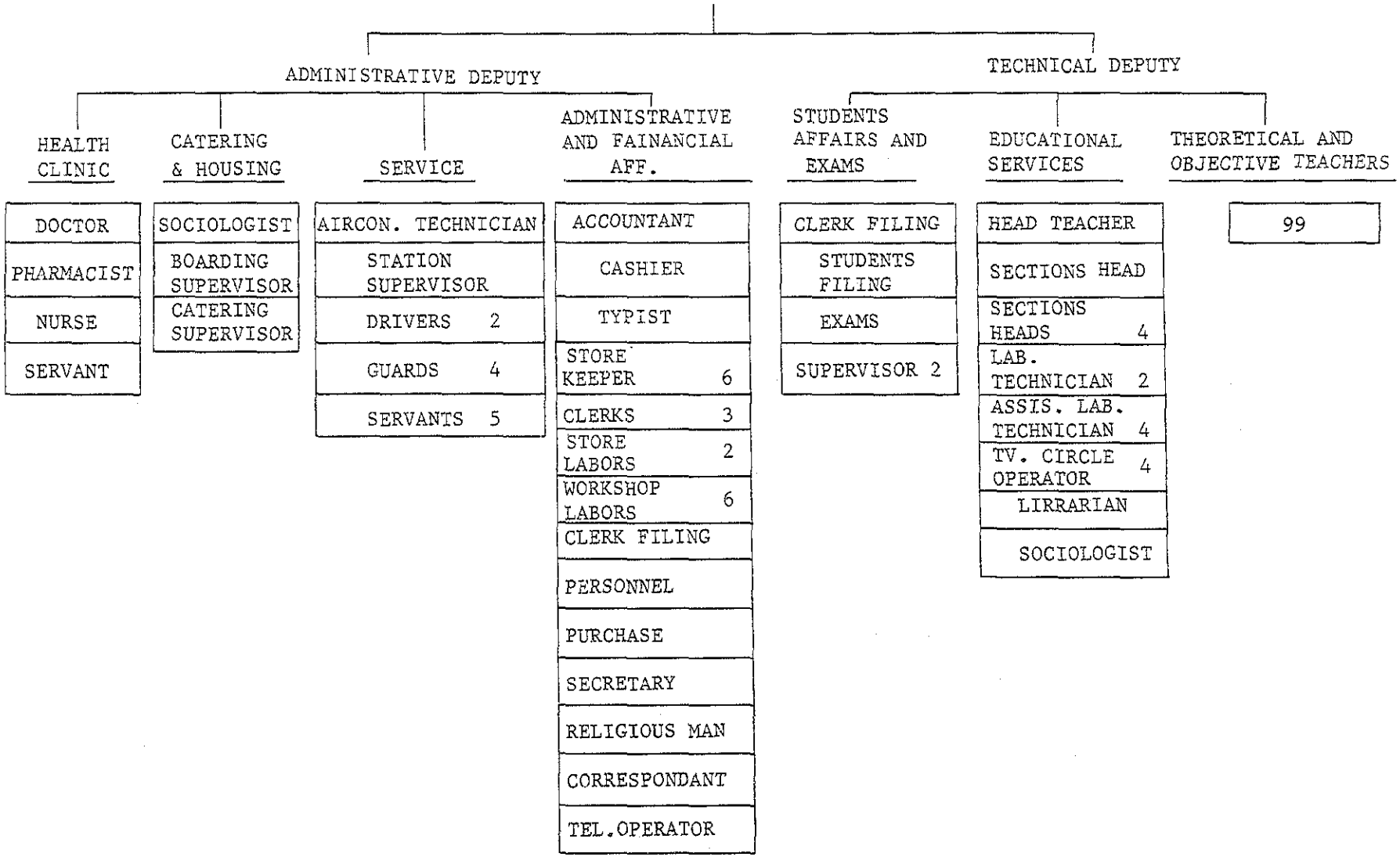


CHART OF VOCATIONAL SECONDARY SCHOOL FOR 660 STUDENTS

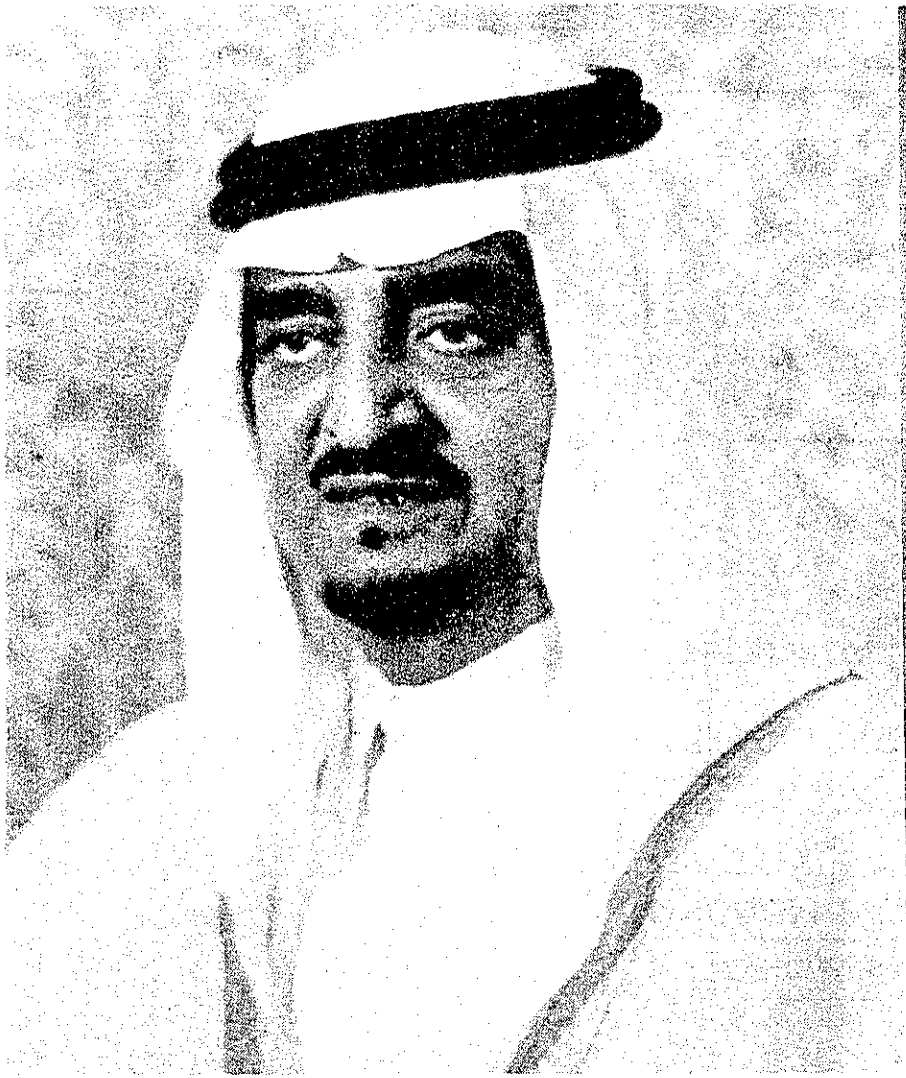


KINGDOM OF SAUDI ARABIA

GENERAL ORGANIZATION
FOR
TECHNICAL EDUCATION
AND
VOCATIONAL TRAINING

DEVELOPMENT OF TECHNICAL EDUCATION AND TRAINING

His Majesty King Fahd Ibn Abdul Aziz



His Royal Highness Prince Abdullah Ibn Abdul Aziz
Crown Prince and First Deputy Prime Minister and
Commander of the National Guard

His Royal Highness Prince Sultan Ibn Abdul Aziz
Second Deputy Prime Minister and Defense and Aviation Minister

KINGDOM OF SAUDI ARABIA
GENERAL ORGANIZATION FOR
TECHNICAL EDUCATION & VOCATIONAL TRAINING

The development of Saudi Human Resources should be considered the main basis for the development program. The national development plans aim to establish the policies needed for the development of these resources, so as to cope with the economic requirements within the framework of the Islamic faith. The National Development Plans are further based on the requirements of society to advance welfare and well-being in the Kingdom.

Due to the current phase of rapid progress and development the Kingdom is enjoying in all economic and administrative sectors, it is necessary to prepare capable Saudi youth to undertake the responsibility of developing the Kingdom's society and to meet its needs for well-trained and highly skilled manpower.

Therefore, Technical Education and Vocational Training is responsible for the preparation of highly qualified manpower to build the structure of the industrial and construction development seeking further prosperity and welfare. Technical Educational and Vocational Training are being given considerable attention since they are one of the most vital educational utilities contributing to the preparation of the national cadres, and the development of national potential to help speed up its move towards progress and civilization.

In order to attain such goals, the Government has constantly been expanding the construction of technical institutes and schools as well as Vocational Training Centres. It has also been encouraging Government bodies to implement the training programs aimed at promoting its skilled personnel in order to lay down the required planning and coordination for the training activities to develop the national manpower in different professions and trades, and consequently to share in the efforts aimed at the accomplishment of the development plans.

The Ministry of Education, in the past, used to be responsible for Technical Education since it was the administrative body supervising Technical Education in the Technical Schools and Institutes in the Kingdom of Saudi Arabia.

As for vocational training, the General Department of Vocational Training in the Ministry of Labor and Social Affairs, used to be the official body responsible for PVCs/VTCs and the graduation of the skilled technical manpower.

These two bodies were able to acquire years of experience in such fields, and prepared hundreds of qualified graduates to work in various commercial, industrial and agricultural sectors.

The Government discovered that one of the main steps towards developing the programs of technical education and vocational training and concentrating the efforts exerted in this field, was to establish a General Organization to shoulder the responsibility of implementing manpower development plans and to allow such an organization financial and administrative independence.

Thus the recommendations of the Ministerial Committee for manpower on the necessity to amalgamate the responsibility of supervision of the training centers and institutes affiliated to the Ministry of Labor and Social Affairs and the Technical Schools and Institutes affiliated to the Ministry of Education, and assign the General Organization for Technical Education and Vocational Training to undertake the performance of these functions were adopted.

Royal Decree M/30 of 10/8/1400 H approving the establishment of this Organization was duly issued.

General Strategic Objectives

The main objective behind the establishment of the General Organization for Technical Education and Vocational Training is to realize the objectives of the plans and programs set up for the development of National Vocational and Technical Manpower and the preparation of the skilled technical cadres needed for the implementation of the Kingdom's development plan. Among the policies the Government is trying to achieve in this field are the following:

1. To advance Technical Education in the fields of industry, agriculture and commerce.
2. The promotion of training standards at various levels to cover the trainees who are still in the preliminary stages or the graduates and those working in the public or private sectors.
3. Emphasis and concentration on research and vocational studies aiming at the development of practical performance and productive efficiency of national manpower.

In order to implement these policies, the General Organization for Technical Education and Vocational Training is adopting the following measures:

1. Qualifying Saudi citizens to be capable of performing vocational and professional tasks which are essential for both private and public sectors in the industrial, agricultural, commercial and services field.
2. Upgrading the standards of On-The-Job technical and professional employees' training so as to provide them with the sophisticated skills in the fields of science and technology and to facilitate their participation in training courses in and outside the Kingdom.
3. Making use of all opportunities that could guarantee the transformation and development of ordinary manpower into a well trained and technical manpower that could result in increased productivity.
4. Allowing chances and opportunities for the illiterates and young people, who failed to succeed throughout the stages of general education, to acquire technical skills through the provision of specialized morning and evening educational programs and consequently enabling them to obtain certificates of vocational and technical training.
5. Preparing general orientation programs for youth leading to the realization of better output for the General Organization for Technical Educational and Vocational Training effort in its technical and training services.
6. Emphasis on the studies and researches pertaining to the problems faced by technical manpower to enable them to keep pace with the requirements of the labor market.

Table Showing Number of Students in Higher Technical Institutes (Industrial / Commercial) in 1401/1402 H

INSTITUTES / NUMBER	Grade I Number	Grade II Number	Grade III Number	TOTAL
Higher Commercial Institutes (Riyadh / Jeddah)	149	80	–	230
Higher Technical Institutes in Riyadh for preparing Instructors and Teachers.	44	26	21	91
Total	193	106	21	321

ASPECTS OF THE GENERAL ORGANIZATION FOR TECHNICAL EDUCATION AND VOCATIONAL TRAINING (GOTEVOT) ACTIVITIES

The purpose of establishing the General Organization for Technical Education and Vocational Training is to implement plans and programs set up for the development of technical and vocational manpower and qualifying the skilled technical cadres within the framework of the policies set up by the Manpower Council. So, the activities of the GOTEVOT include both technical education and vocational training.

Technical Education

This category of education includes three areas:

1. Industrial Technical Education.
2. Agricultural Technical Education.
3. Commercial Technical Education.

Table Showing Number of Students During the Period 1397/1398 to 1401/1402 H

YEARS	NO. OF STUDENTS
1397 / 1398	136
1398 / 1399	265
1399 / 1400	322
1400 / 1401	246
1401 / 1402	190
TOTAL	1159

FIRST: INDUSTRIAL TECHNICAL EDUCATION

It includes the Higher Technical Institute that prepares teachers/instructors as well as Industrial Technical Institutes and Secondary Vocational Schools.

1. The Higher Technical Institute preparing workshop teachers and instructors

   This Institute receives some of the Secondary Vocational Schools' graduates. The duration of study to qualify workshop teachers for secondary vocational schools and institutes as well as VTCs instructors' institute (ITI) is 3 years. The graduate is granted a «Higher Technical Institute Diploma». The number of trainees in 1402 A.H. amounted to 91.

2. Vocational Secondary Schools and Institutes

   These Schools and Institutes receive graduates from the Intermediate schools. The duration of study is 3 years. Graduates are granted a «Secondary Vocational School Diploma».

Number of Students in Technical Institutes and Vocational Schools in the School Year 1401/1402 H

S. No.	Technical Institutes and Schools	GRADE I	II	III	Total
1.	Royal Technical Institute in Riyadh	275	93	127	495
2.	Industrial Model Institute in Jeddah	338	123	39	500
3.	Secondary Vocational School Al-Medinah Al-Monawrah	181	80	34	295
4.	Secondary Vocational School in Hofouf	187	100	34	321
5.	Secondary Vocational School in Abha	40	41	28	109
6.	Secondary Vocational School in Onaizah	207	69	67	343
7.	Secondary Vocational School in Taif	191	42	35	268
8.	*Industrial Institute in Dammam*	204	84	35	323
	GRAND TOTAL	1623	632	399	2654

Industrial Vocational Schools and Institutes in the Kingdom and their locations:

1.	Higher Technical Institute for the teachers/instructors	- Riyadh
2.	Royal Technical Institute	- Riyadh
3.	Industrial Model Institute	- Jeddah
4.	Industrial Institute	- Dammam
5.	Secondary Vocational School	- Abha
6.	Secondary Vocational School	- Taif
7.	Secondary Vocational School	- Onaiza
8.	Secondary Vocational School	- Hofuf
9.	Secondary Vocational School	- Medina

Trades taught in the Vocational Secondary Schools and Institutes:

1. Machine Shop, it comprises:
   a. Machine mechanics
   b. Metal mechanics

These trades include operating machines such as lathes, milling machines and grinding machines as well as blacksmith's work and welding, formulating sheet metals, pipes and metal furniture.

2. Electricity
   It is divided into two branches:
   a. Electrical installations, which comprises the electrical installations necessary for industrtial and constructional work.
   b. Electro-Mechanics branch, which includes electro-mechanical work such as manufacturing transformers, rewinding generators and work on engines as well as repairing mechanical defects and refrigeration work.
3. Auto Mechanics
   It is divided into the following branches:
   a. Auto Mechanics' (Benzine), it includes basic training on auto mechanics' work and maintenance and utilization of the best scientific methods to detect defects.
   b. This branch includes training electrical skills that enable trainees to locate defects in the car's electrical system and effect all necessary repairs.
   c. Diesel Mechanics; it aims at teaching the best scientific methods to repair and maintain diesel vehicles and installed diesel engines.

The Royal Technical Institute in Riyadh teaches the following trades, in addition to the trades mentioned above:

1. Radio / T.V. Section
   This section aims at training radio and telecommunications as well as radio and TV operation and maintenance and repairs of such sets.
2. Civil Engineering Section
   It is divided into two branches:
   a. Architectural Drawing, which graduates draftsmen for civil and architectural engineering work.
   b. Technical Supervisors' Section, this aims at graduating technical supervisors to supervise implementation of civil and architectural work, in addition to theoretical subjects taught to trainees such as: Chemistry, Physics, English Language, Mathematics, Arabic Language and Religion.

SECOND: TECHNICAL AGRICULTURAL EDUCATION

It aims at qualifying and training the technical manpower needed for the agricultural sector, and technically and vocationally training the young generation in the agricultural sector by training and teaching them in various activities of this important sector and industries relating to it, so as to assist in developing the agricultural society and increasing its productivity.

There is:

THE MODEL TECHNICAL AGRICULTURAL INSTITUTE IN BUREIDA in the Kingdom. The duration of study in this Institute is 3 years. This Institute accepts graduates of intermediate schools. The Institute grants its graduates the «Secondary Agricultural Schools Diploma».

The curricula of this Institute comprises the following fields:

1. Vegetable Production.
2. Plants Protection.
3. Animals Production.
4. Agricultural Industries.
5. Horticulture.
6. Agricultural Mechanization.
7. Agricultural Guidance.

Table Showing Number of Students in the Agricultural Model Institutes in Bureida by Years

Years	1398/1399	1399/1400	1400/1401	1401/1402
Bureida Agricultural Institute	265	322	264	190

THIRD: COMMERCIAL EDUCATION

Commercial Education aims at preparing the manpower needed to handle business, financial and commercial work as well as the arranging and distribution of production activities. The following is a list of Higher Institutes, and Secondary Schools teaching business, commercial and financial sciences in the Kingdom.

As for the Higher Institutes for financial, business and commercial sciences, there are two Institutes distributed as follows:

1. Higher Institute for Financial, Business and Commercial Studies in Riyadh. Two classes one in the morning and the other in the evening.
2. Higher Institute for Financial, Business and Commercial Studies in Jeddah. Two classes one in the morning and the other in the evening.

These two Institutes are responsible for training and qualifying specialists in the following fields:

- Business Administration and Secretariate, where special concentration is made on Management Administration.
- Accounting, where concentration is made on Accountancy.
- Computer Programming. It has been agreed to introduce this study in this section.

Graduates of Secondary Commercial Schools can join the Accounting Section, but holders of the secondary school certificate can join the Secretariate Section. Duration of study is two years, after which the graduate is granted a Diploma in Commercial and Financial Studies.

Table Showing Number of Students in Industrial Education Distributed by Trade, Field of Specialization and Grade in Technical Schools and Institutes in 1401/1402 H

Trade Specialization / School or Institute	Grades	MECHANICS			AUTOS			ELECTRICITY		T.V.	Draftsman	Building Supervisor	Total Students in the grade	Grand Total
		Machines	Metals	Instr.	Mechanics	Elect.	Diesel	Instal.	Mech.					
Royal Technical Institute in Riyadh	Grade I	70			53				108	44			275	
	Grade II	14			27			44	18	10			93	495
	Grade III	6			21			19	16	11	22	32	127	
Industrial Model Institute in Jeddah	Grade I	117					91		130				338	
	Grade II	26					60		37				123	500
	Grade III	4							20				39	
Secondary Vocational School in Medinah	Grade I	69			21			91					181	
	Grade II	23			13			30	15				80	295
	Grade III	5			9			20					34	
Secondary Vocational School in Hofouf	Grade I	40	14		48			85					187	
	Grade II	14	9		13			32	18				100	321
	Grade III	5			18				11				34	
Secondary Vocational School in Taif	Grade I	48			50			93					191	
	Grade II	15			12			19	6				42	268
	Grade III	7			13	14		10	5				35	
Secondary Vocational School in Abha	Grade I				20			20					40	
	Grade II	14			14			13					41	109
	Grade III	8			10			10					28	
Secondary Vocational School in Onaizah	Grade I	59			30			92	26				207	
	Grade II	15			24			15	15				69	343
	Grade III	14			19			19	15				67	
Industrial Institute in Dammam	Grade I	27	32		49			96					204	
	Grade II	18			23			29	14				84	323
	Grade III	9			10			16					35	
GRAND TOTAL														2654

Table Showing Number of Students in Higher Institutes for Financial and Commercial Services During the Period 1397/1398 H to 1401/1402 H

YEARS	NUMBERS OF STUDENTS
1397 / 1398	229
1398 / 1399	247
1399 / 1400	264
1400 / 1401	282
1401 / 1402	229

SECONDARY COMMERCIAL SCHOOLS

There are eight secondary commercial schools existing in the Kingdom at present, located in:

Riyadh, Makkah, Medina, Jeddah, Taif, Dammam, Hofuf and Qatif. These schools run two sessions one in the morning and another in the evening.

Technical commercial education covers the following fields:

1. Accounting and Bookkeeping.
2. Business Administration and Secretariate.
3. Commercial Correspondence and typing.
4. Banking transactions.
5. Supplies and warehousing.
6. Sale and Purchase transactions in local and foreign trade.

Number of Students and Secondary Commercial Schools During 1397/1398 H to 1401/1402 H

YEARS	Schools	Students Morning Courses	Students Evening Courses	TOTAL
1397/1398	14	2330	651	2981
1398/1399	14	2626	890	3516
1399/1400	15	3022	1266	4288
1400/1401	16	3041	1427	4468
1401/1402	16	3223	1713	4936
TOTAL	16	14242	5947	20189

VOCATIONAL TRAINING

Vocational Training aims at qualifying the local manpower needed to meet *Government requirements in all sectors, where this national manpower can* fully benefit from all means of development and modern technology attained and realized by industrially advanced countries.

Table Showing Number of Trainees in Vocational Training Centres (Morning Courses) During the Period 1397/1398 H to 1401/1402 H

YEARS	NUMBER OF TRAINEES
1397 / 1398	2188
1398 / 1399	2466
1399 / 1400	3172
1400 / 1401	3801
1401 / 1402	3917
TOTAL	15544

Therefore, priority in vocational training programs was given to the expansion in establishing vocational training centers in various parts of the Kingdom. The number of existing VTCs in the Kingdom at present is 20 out of which 6 centers are mobile.

Table Showing Progress in the Number of Trainees in the Vocational Training Centres (Evening Courses)

YEARS	NUMBER OF TRAINEES
1398	3409
1399	4314
1400	4766
1401	5628
TOTAL	18117

The VTCs are located in each of:

Riyadh, Jeddah, Makkah, Dammam, Bureida, Jouf, Abha, Hasa, Hail, Medina, Baha, Wadi Dawasir, Tabuk, Qatif, Majmaa, Shaqra, Alrass, Hafr-el-Batin, Namas and Allaith. These centers receive trainees on two shifts, one in the morning and another in the evening. Duration of morning courses ranges between 12 and 18 months. Duration of evening courses is approximately five months.

The trainees joining these courses are trained in the following trades:

1. Auto Mechanics
2. Refrigeration and Air Conditioning
3. Machine Trades
4. Painting and Auto Body Repair
5. Electricity
6. Radio / T.V.
7. Sheet Metal
8. Office Machines
9. Commercial Studies
10. Building
11. Plumbing
12. Printing
13. Welding and Blacksmith

The Kingdom of Saudi Arabia is in pressing and urgent need for each of the above mentioned trades and the enrollment of young Saudi men in the Vocational Training Centers will result in a great benefit to the Kingdom, and reduce relying on foreign manpower.

PREVOCATIONAL CENTERS (PVCs)

The Prevocational Centers aim at expanding the training services for the juveniles whose ages range between 14 - 17 years and who failed to continue their academic studies due to their own circumstances.

It is stipulated that those who apply for admission in the PVCs industrial section should have an educational level of no less than 4th elementary level.

As for the commercial section, applicants of up to 30 years old are accepted.

PVCs trainees are given 10 month training courses in various trades. Up to 1400/1401 H, the total number of the trainees who joined the PVCs Kingdom-wide reached 863.

Now, there are six PVCs located in Riyadh, Dammam, Bureida, Hasa, and Abha.

The trades existing in the PVCs:

The Industrial Section

- Machine Trade
- Welding
- Wood Work
- Electricity
- Auto Mechanics

The Commercial Section

Teaches the following trades:

- Accountancy and Book-keeping
- Secretariate and Office Works
- Procurement and Projects Management

Statistical Table Showing Number of Trainees Joining Prevocational Centres Since 1397/1398 H until 1401/1402 H

Y E A R S	Industrial	Commercial	TOTAL
1397 / 1398	207	96	303
1398 / 1399	410	208	618
1399 / 1400	503	250	753
1400 / 1401	612	274	886
1401 / 1402	681	285	966
TOTAL	2413	1113	3526

INCENTIVES PROVIDED TO TECHNICAL EDUCATION AND VOCATIONAL TRAINING TRAINEES

First: Technical Education

A. INDUSTRIAL EDUCATION

- A monthly stipend of SR: 675 is granted to the trainee during the whole training period.
- Providing boarding accommodation and complete rations for the trainees studying outside their home towns and providing one meal for local trainees during the official working hours.
- The sum of SR: 200 is granted annually for each trainee as travel expenses.
- Providing work dress and all educational and drafting supplies as well as daily transportation.
- Providing the opportunity for distinguished trainees to continue their studies in the Higher Technical Institute.
- The graduates can obtain a loan of SR. 100,000 (ONE HUNDRED THOUSAND SAUDI RIYALS ONLY) if he wants to run a private business of his own within the course he studies. This amount will be settled in instalments.
- The graduate would be appointed on the fifth grade in the cadre.
- *If the graduate works as instructor in the vocational training* centers, he will get 20% increase as teaching allowance, this amount can be increased to 30% after the elapse of five years in work. Some other allowances are granted to the graduates (such as job hazard) by virtue of the regulations of the law.

B. AGRICULTURAL TECHNICAL EDUCATION

- The trainee receives a monthly stipend of SR. 675 during the training period.
- Providing work dress and all educational supplies.
- Providing the means of daily transportation.
- Providing accommodation and food for trainees attending from other towns or villages.
- Each trainee attending from other towns or villages receives SR. 200 annually as travel expenses.
- Providing the opportunity to distinguished students to continue their studies inside and outside the Kingdom.
- Providing best work opportunities for graduates and following up their activities after graduation.
- The graduates are appointed on the fifth grade in the cadre.

C. SECONDARY COMMERCIAL SCHOOLS AND HIGHER COMMERCIAL INSTITUTES

- The trainee in the secondary stage receives a monthly stipend of SR. 450 during training. This stipend is increased to SR. 600 monthly for the trainees of the higher commercial institutes.
- Providing the means of daily transportation
- Providing accommodation for the students coming from other towns or villages.
- Allowing graduates from the secondary commercial schools opportunities to continue their studies in the higher commercial institutes and universities.

Second: Vocational Training

1. THE BENEFITS OF THE TRAINEES STUDYING IN THE MORNING COURSES

- The trainee receives monthly stipend of SR. 600 which will be increased to SR. 800 after successfully completing half of the training period.
- The trainee receives a reward of SR. 200 after successfully completing the training course in addition to SR. 1000 if he gets excellent grades.
- The trainee receives another reward of SR. 3000 after completing 6 months of employment in his trade after graduation.
- The trainee receives food allowance of SR. 120 monthly.
- The trainee receives SR. 260 as shoes and clothes allowance, upon joining the course.
- The center bears all educational expenditure such as raw materials, equipment and others.
- The center provides transportation from residence to center and vice versa.
- The center provides air conditioned and well furnished accommodation.
- The graduates are appointed in Government utilities and organizations with excellent salaries.
- The trainee can apply for a loan of SR. 100,000 from the Saudi

Statistical Table showing Number of Trainees Joining the Vocational Training Centres During the Period 1/7/1401 H to 30/6/1402 H by Centres and Vocations

Vocations / Centres	Auto Mechanics with all branches	Electricity	Carpentry	Building with all branches	Welding and Blacksmith	Plumbing	General Mechanics	Sheet Metal	Refrigeration and Air Conditioning	Radio & T. V.	Office Equipment	Printing and all branches	Auto body repair and painting	TOTAL
RIYADH	64	31	79		38	39	30	31	64	52	31	42		501
JEDDAH	77	81	40		30	29	24		42	44	48	37	13	465
DAMMAM	75	55	30		70	45	27		116	22		37	19	496
QASEEM (Buraidah)	97	45	8		29	13	11			16				219
JOWF	50	42	19	3	35									149
ABHA	76	50	39	7	25	14				10				221
AL-HASA	35	28	31		50	81								225
HAIL	–	72	–		27									99
AL-MEDINAH AL-MONAWARAH	61	65	35		16	37								214
AL-BAHAT	112	84	37		69									302
WADI DAWASER	38	37	9		16									100
MAKKAH	84	93	45		37	48								307
TABUK	52	23	21		14	8								118
QATEEF	51	24	63		23	36								197
AL-MAJMA'A	30	31												61
SHAGRA	25	9												34
AR-RASS	–	23	8		10									41
HAFR-AL-BATEN	25	27	14		12									78
AL-LITH	8	15	6		8									37
AN-NAMAS	17	15	9		12									53
TOTAL	977	850	493	10	521	350	92	31	222	144	79	116	32	3917

Credit Bank, if he wishes to run his own private business.

2. BENEFITS OF EVENING COURSES TRAINEES

- Monthly stipend of SR. 400
- SR 2,000 is paid to each trainee successfully completing his course.
- Each trainee receives SR. 120 - as shoes and clothes allowances.
- The trainee receives all training supplies.
- Daily transportation by means of buses owned by the center is provided.
- Free of charge furnished accommodation is provided to the trainees coming from other towns or villages.
- The graduate has the right to get a maximum loan of SR. 100,000 from the Saudi Credit Bank if he wishes to open his own private workshop.

Third: Prevocational Training

BENEFITS OF THE PVCs TRAINEES

- A monthly stipend of SR. 500.
- SR 3,000 is paid to each trainee, successfully finishing his training course.
- Each trainee receives SR. 120 - as food allowance.
- Each trainee receives SR. 260 - as clothes and shoes allowance.
- The trainees who are graduated with excellent grades receive a reward of SR. 1000.
- The center renders the trainees transportation services from residence to center and vice versa.
- The center offers the trainees air conditioned and well furnished accommodation.
- The graduates are appointed in Government utilities and organizations in highly paid jobs.
- The center bears all training expenditure such as raw materials, equipment and others.

ON-THE-JOB TRAINING

The Kingdom's development plan paid special attention to the role the private sector could play in the industrial, agricultural and commercial development of the Kingdom by relying on a technically skilled and well trained national manpower, through participation and coordination with employers to provide the labor force with on-the-job training so as to acquire the required skills and competence.

In order to attain this target, a specialized On-The-Job Training Department was established in Riyadh, with two branches opened in Eastern and Western Provinces.

The Government issued the legislation stipulating the necessity of training not less than 5% of the total employees by the industrial establishments employing more than 100 employees and to work on a set training program including the duration of the course as well as the trades and basic skills performed by the workers.

It is worth stating that the General Organization for Technical Education and Vocational Training spends subsidies to the employees working in the national companies and corporations, in compliance with the Council of Ministers Resolutions providing for the payment of the above mentioned subsidies to the employees of the national companies and factories for attending on-the-job training programs, both regarding lectures and practical training, according to a specified program aimed at attaining certain levels of skill. Internal training in the Kingdom takes place in the company or factory premises; overseas training is done through sending factory employees to attend overseas courses in accordance with approved schedules determined by these companies.

The objectives of the General Organization for Technical Education and Vocational Training in implementing the program of on-the-job training can be summed up as follows:

1. Training Saudi staff to specialise in On-The-Job Training programs so as to develop programs and training curricula and train supervisors and superintendents so that they may perform training of workers and employees supervised by them.
2. Continuation of and expanding assistance efforts towards the companies training their workers and providing them with financial incentives.
3. Setting up and developing a technical and vocational testing program as well as a certification program for the workers through which the technical levels of the workers can be measured, i.e. skilled and semi skilled workers in the various trades.

The regulations for spending training subsidies in the industrial sector for the purposes of On-The-Job Training include the following:

FIRST: TRAINING INSIDE THE KINGDOM

- The General Organization for Technical Education and Vocational Training bears all the basic wages as well as air tickets for the technical instructors during the training period, providing that the industrial enterprise should bear all other financial obligations such as social insurance and costs of the materials and machinery used for training as well as travel expenses.
- The General Organization for Technical Education and Vocational Training pays the salaries of instructors nominated to train these technicians as well as the costs of their air tickets.
- The General Organization for Technical Education and Vocational Training pays to the trainee 50% of his basic salary as an incentive during his training abroad.
- The employer should pay the trainee who successfully completes his training, an increase of no less than 10% of his basic salary, as a training allowance.
- The trainees who successfully complete the training course are granted a certificate for completing the industrial training program.
- Subsidies to the trainees and instructors are paid directly by the authority concerned.

SECOND: TRAINEES OUTSIDE THE KINGDOM

The General Organization for Technical Education and Vocational Training bears all the training expenditure of the workers who are sent abroad for training according to the following:

First: The Company pays the expenditure of the worker including the following:

1. A monthly stipend of SR. 2600 for CATEGORY A countries and SR. 1600 for CATEGORY B countries.
2. Annual book allowance of SR. 1700 for CATEGORY A countries and SR. 1200 for CATEGORY B countries.
3. Annual dress allowance of SR. 4000 for CATEGORY A coun-

tries and SR 2000 for CATEGORY B countries.

4. Annual medical allowance of SR. 4000 for single and SR. 8000 for married trainees who have their wives living with them.
5. 50% of the monthly stipend for the trainees who have their families living with them and 25% of the stipend for each child providing that should not exceed 50% of the stipend.
6. 50% of the basic salaries at home to be spent during the training period abroad.
7. Training fees specified in subsidy request documents.

Second:
1. Air tickets for the wife and children as well as specified financial allocations for those sent for training courses of more than six months period.
2. Annual allowances are paid if training period is six months or more, and half of these allowances are paid if the training period is less.

Third: Upon completion of the training period and return of the worker, the company apply to the GOTEVOT to be compensated for the amounts spent abroad. The following documents should be attached to the application form:

1. Certificate of completing the course.
2. Expenditure documents certified by the educational attachee. These documents are essential for the compensation.

N.B. CATEGORY A countries are countries of North and South America, Canada, Europe, Japan and China.

CATEGORY B includes: Arab and Islamic countries as well as the other remaining foreign countries.

COOPERATION WITH PRIVATE COMPANIES AND ESTABLISHMENTS IN ON-THE-JOB TRAINING FIELD

The General Organization for Technical Education and Vocational Training made a pioneer step in cooperating with companies and establishments where the employees of these companies and establishments are trained inside and outside the Kingdom within the framework of that cooperation. The General Organization for Technical Education and Vocational Training sent a group of 41 technicians from private companies and establishments on training missions abroad representing all levels of the various specializations, to be trained on industrial and commercial jobs and industrial relations to the United States, Egypt, India, Britain, Canada, Sweden, Norway and other countries.

Training periods range between three months and two years according to trades and specialization as well as the company or establishment needs for the kind of overseas training.

The following is a list of some companies and establishments from which the organization has sent members of its personnel abroad:

- Riyadh Electricity Company
- Saudi Ceramic Co.
- Saudi Cables Co.
- Saudi Gases Co.
- Saudi Fertilizers Co.
- AMIANTIT Saudi Arabian Co. (Jeddah and Dammam)
- Zamil - FREDRIC Co.
- Electronic Systems Co.
- Aluminium Products Co. - Dammam
- Saudi Fisheries Co.

INSTRUCTIONAL MATERIALS DEVELOPMENT CENTER AND INSTRUCTOR TRAINING INSTITUTE

The vocational training programs depend upon the efficiency and capability of the instructors. Due to the shortage of Saudi instructors, the GOTEVOT represented by the Vocational Training Directorate established an Instructors Training Institute to meet with the accelerated technological advancement taking place in the Kingdom.

The aims of the ITI/IMDC could be summed up as follows:

1. Providing the Saudi instructors needed for all vocational training programs.
2. Upgrading the competence of the instructors working in the Center.

3. Developing and testing the existing and new training materials, and formulating training concepts and programs and mediated materials for the existing and new trades, whether they were Government training programs or the programs set up to train job instructors in the private sector.

4. Conducting researches and studies, and handling the information relating to the training curricula in the light of the programs established according to the operational plan of training schedules.

A plan to implement the preparation of Saudi instructors has been set up within programs like:

a. Tentative Program

The implementation of the Tentative Program will continue until the inauguration of the new ITI in 1403 A.H. The number of instructors and assistant instructors who enrolled in the ITI in 1402 A.H. was 62 trainees. These trainees were given courses of 10 months duration each aiming at promoting their knowledge of the theoretical subjects related to their trade such as mathematics, industrial drawing, and professional safety, in addition to English and Arabic lessons at the present phase. Trainees successfully completing the courses are sent to Britain for advanced training on developed technical skills in their own field of specialization.

b. Permanent Instructor Training Program

It is anticipated that the Permanent Instructors Training Program will be initiated in 1403/1404 A.H. So all necessary measures needed to qualify a sufficient number of instructors and administrators to secure effective training are being taken for the inauguration of the new ITI in its new premises since it is going to admit 150 trainees in the first stage.

The training period will be two years so as to cope with the specified programs that aim at training and qualifying the Saudi instructors only inside the Kingdom.

This requires providing a sufficient number of new instructors and assistant instructors as well as the requested number of employees for the workshops and support services, in order to make the final capacity of the new ITI about 300 people.

CURRICULA AND PROGRAMS DEVELOPMENT

The Institute will develop the existing programs and introduce new competency based individualized and mediated training materials in order to upgrade the productive potential of the Saudi instructors in accordance with the proposed training and educational ladder.

This can be summarized as follows:

1. Standardization of the training programs so as to ensure standardization of graduates.
2. Supporting programs with modern educational media in order to graduate greater numbers of trainees.
3. Changing some of the training programs into individualized (CBIM) training programs, so as to facilitate access to and usuage of such programs in any section, any time, within the scope of its requirements at any desired level without even being restricted by beginning and ends of the courses.

In order to attain the desired objectives of Instructors Training Institute and the Instructional Media Development Center, priority should be given to training and qualifying Saudi citizens in the instructors training process.

COOPERATION AGREEMENTS AIMING AT DEVELOPING TECHNICAL, EDUCATIONAL AND VOCATIONAL TRAINING

The Government has paved the way for Saudi youth to attend training courses outside the Kingdom, and signed agreements with other Governments and organizations to benefit from their experience in this field inside and outside the Kingdom. Agreements were signed with the Government of the Federal Republic of Germany in 1395 H. for the development of workshops, appliances and equipment and supervising practical and theoretical courses of study as well as training instructors and teachers and equipment installation and maintenance of industrial and agricultural schools. In 1395 A.H., a Project Agreement for technical cooperation was signed with the U.S. Government. According to the terms of the project the U.S. Department of Labor provides consulting services for developing vocational training and planning and conducting training programs and curricula and instructors training in the specialized institutes in the United States as well as providing advice and consultation regarding the construction of the training centers and facilities.

Another agreement was signed between the Government of His Majesty the King and the Government of the Republic of France for the latter's contribution in developing the technical education programs.

There exists another agreement signed with the Government of Japan in the light of which, the technical electronics institute will be established and operated in Riyadh.

So as to benefit from overseas courses there are now about 145 of the Saudi

youth receiving training in Germany, U.S., France and Britain. Some of them returned and they are now participating in the efforts exerted to achieve the goals of the General Organization for Technical Education and Vocational Training.

COOPERATION WITH OTHER COMPANIES AND ORGANIZATIONS IN THE FIELD OF TECHNICAL EDUCATION

The GOTEVOT made a pioneer step in cooperating with other companies and establishmnts. In the framework of such cooperation, trainees of these companies and establishments were sent to technical education schools and institutes for training. The companies and establishments with which cooperation agreements have been reached are:

1. COOPERATION BETWEEN GOTEVOT AND THE GENERAL ORGANIZATION FOR PETROLEUM AND MINERALS (PETROMIN)

   The GOTEVOT and PETROMIN agreed that PETROMIN trainees are accepted to attend training in secondary and commercial schools and institutes so as to prepare the required number of technicians needed for PETROMIN projects, in the fields of Machine Shop, Electricity, Auto Mechanics, Accounting, and Secretariate. According to this program 236 trainees were accepted this year.

   These trainees receive rewards and stipends from PETROMIN in addition to the incentives paid to them by GOTEVOT. The graduates will join PETROMIN projects. This is the third year of cooperation with PETROMIN.

2. SAUDI BASIC INDUSTRIES CORPORATION (SABIC)

   This company is responsible for the basic industries projects in Jubail and Yanbu, and it has two training programs:

   The FIRST ONE is for one year in which the trainees receive basic training in Machine Shop and Electricity. 260 students joined this program.

   The SECOND is a three year program according to the industrial institutes and secondary vocational schools. 284 students joined this program.

3. THE CONSOLIDATED ELECTRICITY COMPANY FOR THE EASTERN PROVINCE

   The trainees of this company are trained according to the regulations applied in the school or institute. Graduates work in the power stations of this company. A number of 350 students were accepted this year according to this program. This is the third year of cooperation between GOTEVOT and the Consolidated Electricity Company for the Eastern Province.

4. CONSOLIDATED ELECTRICITY COMPANY FOR THE CENTRAL PROVINCE

   It was agreed with this Company to accept 68 trainees starting from the year 1401/1402 A.H., in accordance with the regular program of these institutes and schools. This year is the second year of cooperation between the GOTEVOT and the Consolidated Electricity Company for the Central Province.

5. S A U D I A

   66 trainees were accepted in Jeddah Institute to attend training courses according to the program applied in the Institute (3 years duration) in the following trades:

   Machine Shop - Electricity - Auto Mechanics
   This is the first year of cooperation with the Saudia.

6. CONSOLIDATED ELECTRICITY COMPANY FOR THE SOUTHERN PROVINCE

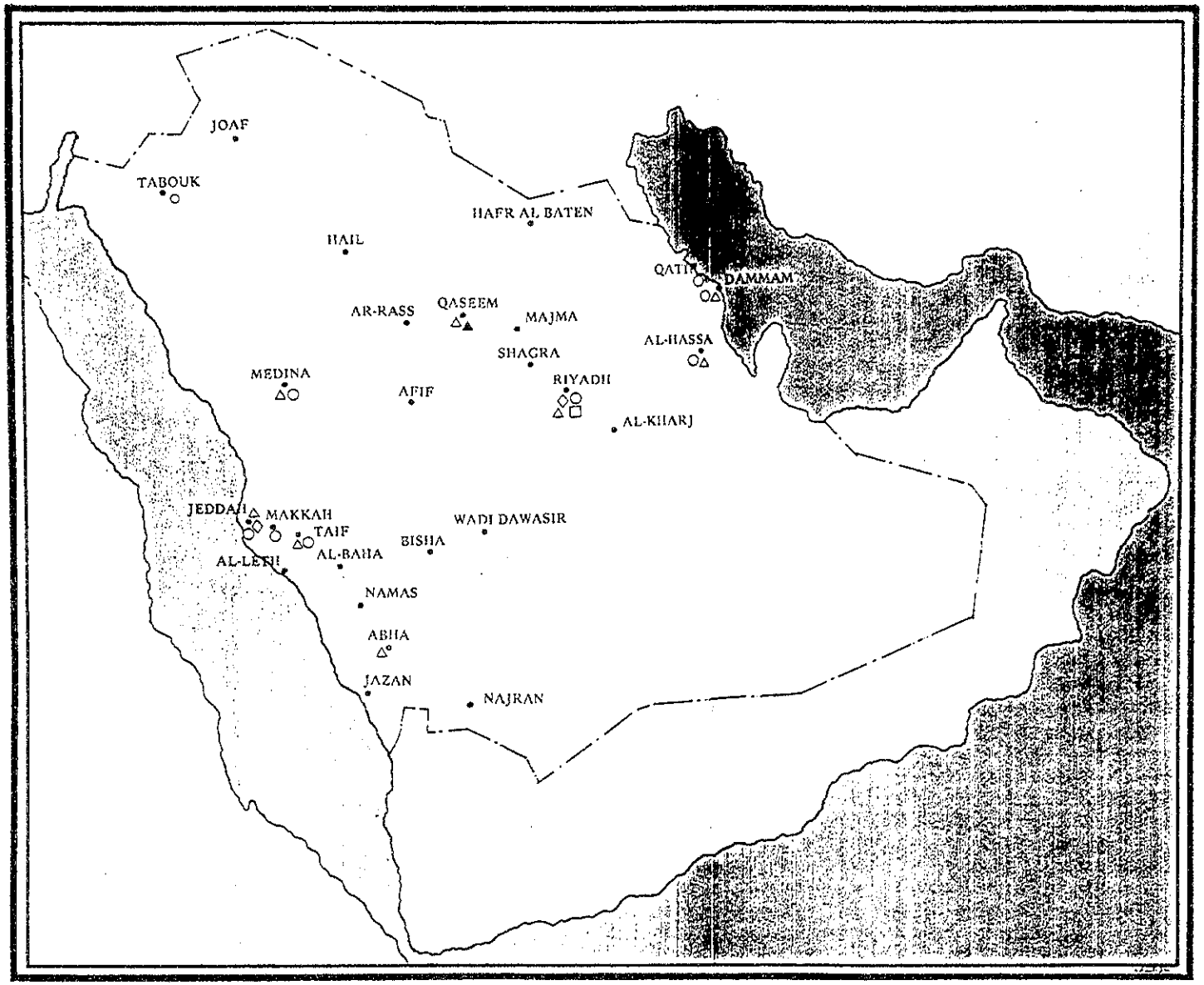
   7 trainees of this company were accepted for the year 1401/1402 A.H. 180 trainees will be accepted for the year 1402/1403 A.H. This is the second year of cooperation with the Consolidated Electricity Company for the Southern Province.

In the light of what was mentioned above, the services rendered by the General Organization for Technical Education and Vocational Training to the national industry whether it was for the public or private sectors in the field of preparation and qualification of manpower needed by them are remarkable.

Also, the policy of the GOTEVOT is not confined to the trades currently existing in its schools and institutes, but the GOTEVOT expressed its readiness to introduce any trade requested by industry. The GOTEVOT now is on its way to establish the electronics institute in cooperation with the Japanese Government. This institute will have the following specializations:

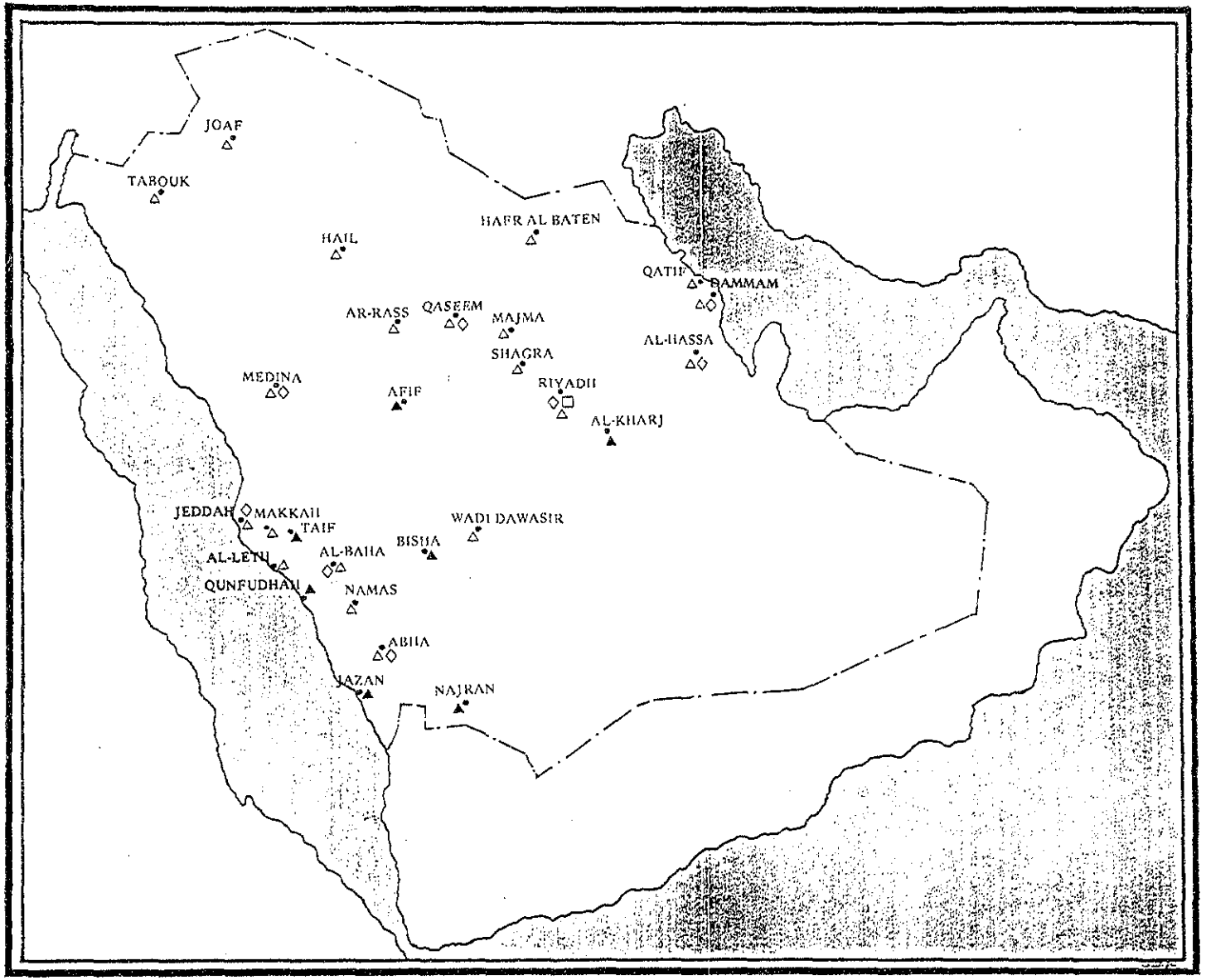
1. Radio and T.V.
2. Electro Mechanical Systems
3. Industrial Electronics
4. Communications and Telecommunications

The GOTEVOT is working to introduce the post-vocational secondary stage, i.e. the technical stage in which the education will be for two years after the general secondary school or vocational secondary school (Polytechnic).



LEGEND

- Agricultural Institute ▲
- Secondary Commercial School ○
- Industrial Institute △
- Higher Technical Institute □
- Higher Commercial Institute ◇


JOAF
TABOUK
HAIL
HAFR AL BATEN
QATIF
DAMMAM
AR-RASS
QASEEM
MAJMA
SHAGRA
AL-HASSA
MEDINA
AFIF
RIYADH
AL-KHARJ
JEDDAH
MAKKAH
TAIF
WADI DAWASIR
BISHA
AL-BAHA
AL-LETH
QUNFUDHAH
NAMAS
ABHA
JAZAN
NAJRAN
LEGEND
Instructor Training Institute and Instruction Materials Centre.
Vocational Training Centre
Prevocational Training Centre
Vocational Training Centre under construction.

Summary of the Fourth Development Plan

KINGDOM OF
SAUDI ARABIA

MINISTRY
OF PLANNING

1405 — 1410 A. H.
1985 — 1990 A. D.

KINGDOM OF
SAUDI ARABIA

MINISTRY
OF PLANNING

Summary of the Fourth Development Plan

1405 — 1410 A. H.
1985 — 1990 A. D.

IN THE NAME OF ALLAH

THE COMPASSIONATE THE MERCIFUL

CONTENTS

Chapter		Page
I.	**DEVELOPMENT AND PLANNING IN SAUDI ARABIA**	11
	A - Quality and scale of development	11
	B - Development under the first three plans	11
	C - International benefits of the Kingdom's development	12
	D - Long term design for the economy	13
II.	**PROGRESS DURING THE THIRD DEVELOPMENT PLAN**	14
	A - Objectives and policies of the third Plan	14
	B - Structure and growth of the economy	14
III.	**THE OBJECTIVES AND THEMES OF THE FOURTH PLAN**	16
	A - The main objectives of the Fourth Plan	16
	B - Structural change	17
	C - Development and technology	18
	D - The role of government in the Fourth Plan	18
	E - Diversification of the economy	18
IV.	**KEY ISSUES FOR THE FOURTH PLAN**	19
V.	**MACRO-ECONOMIC ANALYSIS OF THE FOURTH PLAN**	21
	A - The economy at the start of the Fourth Plan	21
	B - Government expenditure in the Fourth Plan	21
	C - Gross Domestic Product in the Fourth Plan	23
	D - Manpower, employment and productivity	24
	E - Foreign trade	25
	F - Strucural change in GDP expenditure	26
	G - The second phase of diversification	27
VI.	**THE PRIVATE SECTOR**	30
	A - Scope and nature of private sector activities	30
	B - New economic and business environment	32
	C - Fourth Plan perspectives	33

VII . SECTORAL DEVELOPMENT 35

A - Strategic principles for sectoral development 35
B - Strategic themes for sectoral development 36

VIII . NATURAL RESOURCES 37

A - Water 37
B - Energy 39
C - Mineral resources and mining 41

IX . THE PRODUCING SECTORS 43

A - Agriculture 43
B - Industry 45
C - Electric power 48
D - Construction 49
E - The industrial cities at Jubail and Yanbu 50

X . THE SERVICES SECTORS 52

A - Commercial services 52
B - Banking and finance 54
C - Government services 56

XI . HUMAN RESOURCES DEVELOPMENT 58

A - General education 58
B - Higher education 59
C - Training 61
D - Manpower policies, regulations and services 63
E - Science and technology 64

XII . SOCIAL DEVELOPMENT 66

A - Health services 66
B - Social services 68
C - Cultural, information and youth affairs 70
D - Religious and judicial affairs 71

XIII . PHYSICAL INFRASTRUCTURE 74

A - Transport 74
B - Posts and Telecommunications 77
C - Municipal and Public works 79
D - Housing 80

XIV . REGIONAL DEVELOPMENT 83

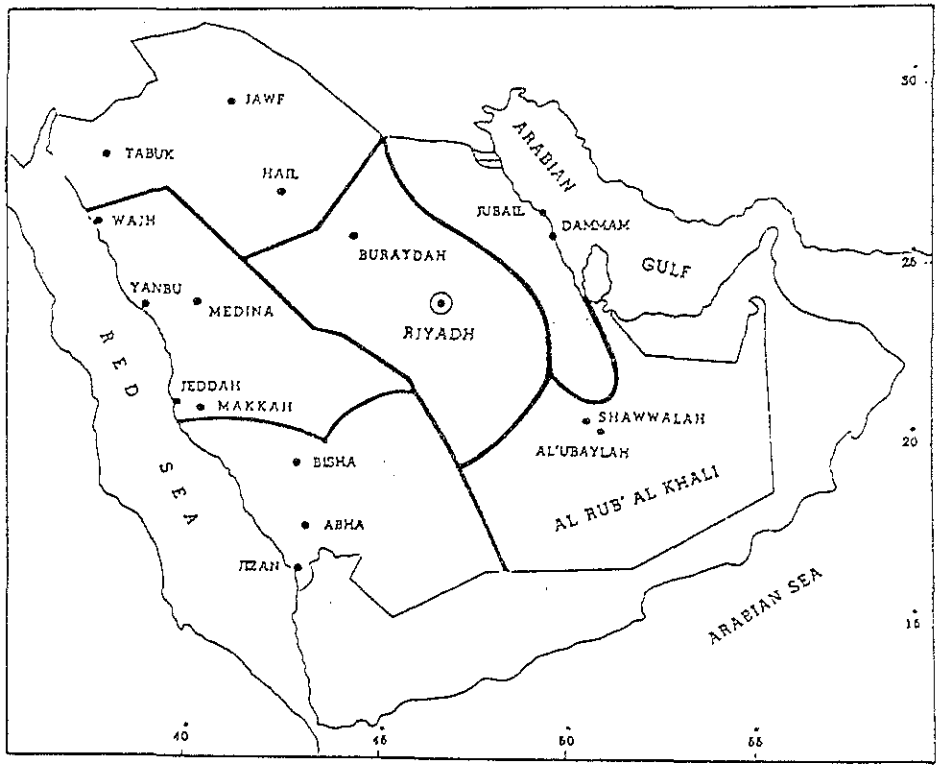
XV . PLANNING AND IMPLEMENTATION CONTROL 85

A - The planning system 85
B - Implementation control 86

PREFACE

This booklet is a summary of the Plan Document of the Fourth Development Plan. It is intended to be a convenient outline of the whole Development Plan and any readers who need more detailed information are referred to the main Plan Document, which is available from the Ministry of Planning, Riyadh.

KINGDOM OF SAUDI ARABIA



I. DEVELOPMENT AND PLANNING IN SAUDI ARABIA

The Kingdom will have completed twenty years of planned development by the end of the Fourth Development Plan. Development over the past fifteen years has been characterized by the following features:

- the quality and scale of development;
- the changing emphases of the first three development plans;
- the international benefits from the Kingdom's development;
- the long-term design for the economy.

A. QUALITY AND SCALE OF DEVELOPMENT

The most distinctive qualitative feature of Saudi Development has been the role of Islamic values and institutions. By asserting and invoking Islamic concepts about society, the kingdom has achieved a unique blend of material and social advance. Ever since the First Plan, the Kingdom's development has had three major dimensions:

- economic - the advances in infrastructure, basic industries and agriculture;
- social - the creation and expansion of free education, free health care and social services, subsidized housing;
- institutional - the institutional changes established new agencies and regulations, resulting in expansion of absorptive capacity.

The scale of development is illustrated by:

global sales of 35 billion barrels of crude oil over the past 15 years;
- government spending alone totalling SR 2,000 billion;
- average annual growth rate of the non-oil economy of about 12 percent;
- investment volume of about 60 percent of non-oil GDP.

B . DEVELOPMENT UNDER THE FIRST THREE PLANS

The economic and social development of Saudi Arabian progressively unfolded and accelerated over the course of the first three Development Plans.

- The First Five Year Plan, 1390-1395 A.H. (1970-75) was modest in nature: about SR 80 billion were spent mainly on developing basic infrastructure, particularly public utilities, and on improving government services and initiating manpower development.

- The Second Five Year Plan, 1395-1400 A.H. (1975-80): government expenditure increased nine-fold to reach nearly SR 700 billion. Many of the essential features of Saudi Arabia development were firmly established including:

  — the leading role of the government in development;
  — the government's large contribution to capital formation;
  — the importance of infrastructural development and the associated role of the construction industry.

- The major challenge of inflation was confronted and overcome by government policy allowing the operation of market forces to restore eventual balance in the national economy, and government expenditure alleviating shortages and bottlenecks.

- The Third Five Year Plan, 1400-1405 A.H. (1980-85): the Third Plan strategy moved in three directions to advance the development process through:

  completion of many infrastructural facilities;
  — emphasis on the need for output-oriented public sector investment;
  — increased output from the producing sectors, with continued manpower development for higher productivity.

These and other aspects of the Third Plan ushered in a period of structural change in both government expenditure and grosss domestic product. The Second half of the Third Plan period was marked by the disappearance of the special conditions in the international oil market that stimulated high revenues. The downturn in revenues was subsequently reflected in lower levels of government investment and a decline in economic grouth rates.

However, by the end of the Third Plan significant improvements had been attained in the material and institutional conditions for individual and social welfare.

C. INTERNATIONAL BENEFITS FROM THE KINGDOM'S DEVELOPMENT

The benefits of Saudi Arabian development have been extended to many other countries through support for free market competition, both domestically and internationally, and through the active participation of Saudi Arabia in assisting the development of other countries.

In specific terms, the benefits have resulted from:

- *Private enterprise:* Licenses have been issued to around 3,000 industrial companies; thousands of small and medium-size firms have emerged; hundreds of joint ventures with foreign partners have been established; numerous foreign workers have gained employment in the Kingdom.
- Free trade: Saudi Arabia's growing economy has placed it among the leading trading nations of the world. Over the past fifteen years, imports have amounted to around SR 1,800 billion, of which 23 percent came from the United States; 35 percent came from Europe; 12 percent came from Japan; and 30 percent came from other countries. Saudi Arabia has allowed these imports to enter virtually tariff free. Many trading partners have benefited from this rapid growth and transformation of the Saudi economy.
- International co-operation: during the past fifteen years, Saudi Arabia has granted development aid totalling SR 136 billion to many developing nations. The Kingdom's development assistance ranks very high among world aid donors as a proportion of Gross Domestic Product.

D. LONG-TERM DESIGN FOR THE ECONOMY

The achievement of balanced development would not have been possible without a comprehensive, consistent and structurally sound design for the economy and society as a whole. Sustained development during the Fourth Plan, and beyond, is based on three essential features:

- Industry: in order to reduce uncertainties associated with fluctuations in oil demand, the government is determined to expand its oil-related industries (refineries and petro-chemicals) and to develop the other producing sectors of the economy.
- Technology: the Kingdom recognizes the essential role of technology, and encourages the latest developments in technology and their impact on economic activity and work methods. The future welfare of the Kingdom will be closely linked to relevant, Kingdom-specific advances in technology, especially those related to petro-chemicals, water resources, and solar energy.
- Free economy: the government will continue to support a free market economy within the framework of the public interest. The Kingdom's experience has shown this system to be efficient and effective. Saudi Arabian development is now entering the phase where the various elements of economic and institutional structures (for example, the importance of the producing sectors, productivity, new technologies) are all coming together to reinforce the private sector and the market economy.

II. PROGRESS DURING THE THIRD DEVELOPMENT PLAN

The Third Plan was prepared at a time when the need for consolidation was becoming most urgent. As a result of high growth in the non-oil sectors (averaging 15 percent annually) the Kingdom emerged with substantial absorptive capacity to carry the momentum of economic expansion further towards the long term goal of a diversified economy.

A. OBJECTIVES AND POLICIES OF THE THIRD PLAN

The main themes of the Third Plan were:

- emphasis on resource development and growth in the producing sectors (agriculture, oil, gas, industry and mining) to promote structural changes in the economy;
- increased economic and administrative efficiency;
- increased participation in the development process, and the importance attached to social welfare.

B. STRUCTURE AND GROWTH OF THE ECONOMY

The fluctuations in the international oil market had their impact on the Kingdom's total gross domestic product, but more directly on the oil sector. While in real terms the non-oil economy grew at an average annual rate of 8.5 percent during the first three years of the plan, growth rates fell to less than 1 percent in the last two years. Over the Plan period as a whole, the non-oil economy grew at an average rate of 5.1 per cent, close to the 6.2 per cent growth rate envisaged in the Plan.

Based on current prices, the share of non-oil sector in GDP rose from 34.8 percent in 1399/1400 to 60.2 percent in 1404/05, caused by the sharp decline of the oil sector and by the continuing diversification of the economy.

The sectoral growth rates in the non-oil economy began to reflect the desired structural changes with strong growth in manufacturing, agriculture and financial services. The construction sector entered its planned phase of gradual contraction. Details are shown in Tables 1 and 2.

GROSS DOMESTIC PRODUCT IN THE THIRD PLAN

Table 1.

	SR Billion (current prices)		Annual average growth in percent (constant 1399/1400 prices)	
	1399/1400/1404/05		Planned	Actual
1. NON-OIL SECTORS				
Producing Sectors				
Agriculture	4.65	10.58	5.4	8.7
Mining	1.36	1.60	9.8	5.7
Manufacturing	6.47	13.53	18.8	14.1
Utilities	0.27	(-1.49)*	29.5	24.0
Construction	43.11	45.54	(-2.5)	(-1.4)
Private Service Sectors				
Trade	17.76	27.59	8.4	8.8
Transport	15.75	23.43	12.9	7.1
Real Estate	10.96	12.39	]7.3	2.1
Finance**	4.57	16.70	]	13.1
Other Services	5.26	11.06	3.0	7.9
Government Services	23.38	54.70	7.2	5.8
Subtotal, NON-OIL SECTORS	133.54	215.63	6.2	5.1
2. OIL SECTOR	250.05	142.49	1.4	(-14.6)
3. TOTAL GROSS DOMESTIC PRODUCT	383.59	358.12	3.2	(-5.8)

★ Reflects subsidized consumer prices

★★ Less imputed bank service charges

GOVERNMENT EXPENDITURE ON DEVELOPMENT AGENCIES DURING THE THIRD PLAN

(current prices)

Table 2.

Spending Category	Planned Expenditure		Estimated Actual Expenditure	
	SR. Billion	Percrnt	SR. Billion	Percent
Economic Resources	190.7	31.3	120.4	21.4
Human Resources	129.6	21.3	124.3	22.2
Health and Social Services	61.2	10.0	69.6	12.4
Transport and Communications	138.6	22.7	139.1	24.7
Municipalities and Housing	89.3	14.7	108.9	19.3
Total for Development Agencies	609.4	100.0	562.3	100.0

III. THE OBJECTIVES AND THE THEMES OF THE FOURTH PLAN

A. MAIN OBJECTIVES OF THE FOURTH PLAN

The Fourth Plan objectives were formulated to ensure continuity with the strategy of the Third Plan. Emphasis is put on efficient use of resources and on development of the producing sectors and of human resources. These objectives represent a comprehensive framework for structural change.

There are elenven objectives for the Fourth Development Plan:

1. To safeguard Islamic values, duly diserving, disseminating and confirm ing Allah's Sharia (God's Divine Law).
2. To defend the Faith and the Nation and to uphold security and social stability.
3. To form productive citizen-workers by providing them with the services of education and health, ensuring their livelihood and rewarding them on the basis of their work.
4. To develop human resources, thus ensuring a constant supply of manpower, upgrading and improving efficiency to serve all sectors.
5. To raise cultural standards to keep pace with the kingdom's development.
6. To reduce dependence on the production and export of crude oil as the main source of national income.

7. To continue the real structural changes in the kingdom's economy through continuous transformation to produce a diversified economic base, with due emphasis on industry and agriculture.
8. To develop mineral resources and to encourage their discovery and utilization.
9. To concentrate on qualitative development through improving and further developing the performance of the utilities and facilities already established during the three previous development plan periods.
10. To complete the infrastructural projects necessary to achieve overall development.
11. To achieve economic and social integration among the Arab Gulf Cooperation Council (GCC) countries.

These objectives are intended to encompass four main themes for the Fourth Plan:

- structural change in the economy;
- advances in technology;
- active government role in implementation of development projects;
- diversification of the economy.

B. STRUCTURAL CHANGE

The economy is expected to continue structural change during the Fourth Plan period. The essence of the change will be:

- decline in the growth of sectors such as construction, distributive trades, transport and communications;
- acceleration in the growth of the producing sectors (particularly manufacturing and agriculture) and of financial and business services.

In pursuit of the policy of structural change, substantial financial support is built into the government's expenditure program to encourage the private sector to take initiatives and mobilize its resources for investment in the sectors with high growth prospects.

During the Fourth Plan there are expected to be transitions in three main areas:

- new prospects for intersectoral linkages in the economy, especially between the producing and service sectors;
- new opportunities and expanded markets through closer links to the GCC and to the industrial countries;
- new responsibilities and pressures on the private sector to become involved in technically more complex manufacturing and marketing operations, with longer horizons for return on investments, new patterns of organization, and new structures of management and control.

C. DEVELOPMENT AND TECHNOLOGY

Under the prevailing conditions in the Kingdom, the critical elements for success are the development of production skills and the adoption of efficient technologies. The maximization of opportunities for diversification and utilization of relevant new technologies will require strong incentives for promoting joint ventures capable of offering continuity in technological cooperation and product development.

D. THE ROLE OF GOVERNMENT IN THE FOURTH PLAN

The government will do everything it can to help the economy make the transitional steps towards structural change. To ensure their realization, the Plan's objectives have been translated into specific tasks and policies, the implementation of which will be closely reviewed.

E. DIVERSIFICATION OF THE ECONOMY

The Kingdom's development strategy has taken a realistic course - instead of turning from crude oil, the objectives have been to maximise the advantages of being the most efficient (in cost terms) and the most reliable (in terms of quantities of hydrocarbon reserves) among the oil producers in the world. These advantages make saudi Arabia a natural locdation for the production of petrochemicals. Accordingly the Kingdom has installed capacity to collect and process gas, established a refinery industry, laid the founation for a petrochemicals industry, and created the conditions for downstream petrochemicals to be produced by the private sector, thereby firmly establishing the kingdom as a processor / producer of derivative materials and products within and from the oil sector.

However, the move into petrochemicals was never intended to be a complete substitution for oil as a foreign exchange earner. In the non-hydrocarbon sectors, the immediate policy objective is the identification of and support for sectors contributing to diversification. Every activity that generates foreign exchange revenue or leads to import savings is a contributor. Owing to its potential ability to be both a saver and producer of foreign exchange, manufacturing must take the central place in economic diversification during the Fourth Plan and beyond.

IV. KEY ISSUES FOR THE FOURTH PLAN

The Fourth plan gives special consideration to a number of key policy issues which effect all sectors of the economy and society. There are also issues which are specific to individual sectors; these are covered in the relevant sectoral chapters below.

- **Subsidies.** The main policy issues are: whether the protective functions of subsidies are still necessary now that inflation is under control; the financial efficiency of public services; the broad questions of general economic efficiency at all levels which are raised by the continuation of subsidies; and the needs of low-income families for some forms of support.
- **Manpower and employment** policy issues relate in particular to Saudization targets, to the need to match education with the skill requirements of the private sector, to employment opportunities for women, and to efficiencies in the education system.
- **Education issues** concern problems of operational efficiency, the effectiveness of the educational system in supplying manpower needs, and staffing patterns.
- **Housing** issues essentially revolve around government lending policies. Some of the main policy questions are the extension of loans for purchase of existing houses, the use of loans for renovation of houses, adjustments in the scale of loan subsidies in areas with excess housing supply, and loans for the purchase of apartments.
- **Technology** has a pivotal role in the kingdom's development. The main issues are the use of advanced technology and the consequent obligation to raise society's technical understanding, the transfer of technology in industry, and the use of advanced technology in helping to solve the kingdom's underlying problems of the availability and utilization of scarce natural resources.
- **Agricultural support** is necessitated by four main factors: the social and economic advantages of higher rural incomes: the benefits to other economic sectors from agricultural development; protection against desertification; and the benefits of preserving agricultural communities. The main issues are the relationships between these factors, their financial costs and the problems of water use.
- **Water development** issues relate to the need for closer coordination between agricultural and water policies, the pricing policies for various water users, and the needs for conservation and for coordination of water development agencies.
- **Health** issues are primarily concerned with the recruitment, training and deployment of medical manpower, with the integraton of health facilities and services, and with health education.
- **Cultural and social** issues relate especially to the social impacts of rapid development and the potential challenges of social and cultural change.

V. MACRO-ECONOMIC ANALYSIS OF THE FOURTH PLAN

A. THE ECONOMY AT THE START OF THE FOURTH PLAN

The Saudi economy would be best described as in a state of transition throughout the Fourth Plan.

- In the public sector there are two important features:
  - — the virtual completion of basic infrastructure; after more than a decade of heavy investment in physical infrastructure and basic industries, the government's future involvement in these areas will be substantially reduced;
  - — The maximisation of the purchasing power of government spending, both in the domestic and international markets, through the continuation such measures as the increased scrutiny of project design and implementation, competition in public tenders, and the critical examination of cost levels.
- In the private sector the main feature of transition is the growing competition for the declining volume of government projects, putting pressure on margins and requiring higher quality performance; in addition, many of the private sector's own investment projects have been completed, which also makes competition much stronger.
- Both the public and the private sectors are adjusting to the new conditions. Therefore the thrust of the government's policies will be on:
  - — Concentrating financial support to private activity in the producing sectors;
  - — safeguarding and increasing the Saudi private sector's share in government projects.

B. GOVERNMENT EXPENDITURE IN THE FOURTH PLAN

Total government expenditure in the Fourth Plan, including non-civilian items, is set at SR 1,000 billion, at current prices, with SR 687.5 billion allocated to civilian development expenditures. Under the assumption of a balanced budget, average annual revenues are estimated at SR 200 billion. The allocation of civilian expenditure is broken down into three main categories as shown in Table 3.

CIVILIAN DEVELOPMENT EXPENDITURE IN THE FOURTH PLAN

Table 3.

Development Agencies	SR Billion(1)	Percent
— Economic Resources Development	130.7	19.0
— Human Resources Development	135.3	19.7
— Health and Social Services	89.7	13.0
— Transport and Communications	76.9	11.2
— Municipalities and Housing	67.4	9.8
Sub-total	500.5	72.7
Transfer Payments and Reserves		
— Credit institutions (net domestic-lending)	60.1	8.8
— Subsidies and budget reserves	57.2	8.3
Sub-total	117.3	17.1
Administration Expenses		
— Religious and Judicial	18.5	2.7
— Non-Financial Administration	7.0	1.0
— Non-Portfolio Offices	9.9	1.4
— Financial Administration	34.8	5.1
Sub-total	70.2	10.2
Total Civilian Expenditure	687.5	100.0

Recurrent expenditure comprises about 40 percent of the total civilian expenditure. The share devoted to project expenditure is 45 percent and the remaining 15 percent is allocated to operation and maintenance.

Throughout the Plan period, the annual budgets will be kept flexible in accordance with the uncertainties of the oil market. This flexibility will not extend, however, to the core projects already under implementation - these will be completed.

(1) Current prices.

GOVERNMENT EXPENDITURE ON DEVELOPMENT AGENCIES DURING THE FOURTH PLAN

Table 4.

	Planned Expenditure(1)		Percent change: Fourth Plan to Third Plan's Actual Expenditure
	SR. Billion	Percent	
— Economic Resources Development	130.7	26.1	+8.6
— Human Resources Development	135.3	27.1	+8.8
— Health and Social Services	89.7	17.9	+28.9
— Transport amd Communications	76.9	15.4	−44.7
— Municipalities and Housing	67.4	13.5	−38.1
Total for Development Agencies	500.0	100.0	−11.1

(1) Current prices.

C. GROSS DOMESTIC PRODUCT IN THE FOURTH PLAN

The Gross Domestic Product (GDP) is expected to grow at 4.0 percent per year. The annual growth rate for the non-oil economy will be 2.9 percent and the contribution of the oil sector to GDP during the Fourth Plan is estimated to increase, on average by 5.6 percent annually. This will be mainly due to increasing exports of refined products.

The non-oil sectors will represent the primary area for the economy's structural transformation. The GDP contributions by sector show that growth expectations are concentrated in three areas: agriculture, industry and financial and business services. These sectors have a critical role to play in the coming five years in helping to change the structure of the economy and advance the process of diversification.

Development prospects during the Fourth Plan period for individual sectors of the non-oil economy represent the strategic objectives and are shown in Table 5.

GROSS DOMESTIC PRODUCT IN THE FOURTH PLAN

(1399/1400 CONSTANT PRICES)

Table 5.

	SR. Billions		Annual average
	1404/05	1409/10	growth in percent
1. NON-OIL SECTORS			
Producing Sectors	62.33	73.15	3.3
Agriculture	7.06	9.44	6.0
Mining	1.80	2.08	3.0
Manufacturing	12.51	20.61	10.5(3)
— Petrochemicals	—	5.15	—
Utilities	0.79	1.01	5.0
Construction	40.17	34.86	−2.8
Private Service Sectors	77.55	93.25	3.8
Trade	27.07	30.63	2.5
Transport	22.18	28.31	5.0
Real Estate	12.17	12.17	0
Finance(1)	8.46	13.02	9.0
Other Services	7.67	9.12	3.5
Government Services	30.94	30.94	0
Subtotal, NON-OIL SECTORS	170.82	197.34	2.9
2. OIL SECTOR	113.29	148.56	5.6
3. TOTAL GROSS DOMESTIC PRODUCT(2)	284.11	345.90	4.0

(1) Less imputed bank service charges
(2) Excluding import duties
(3) The combined growth for both branches would be 15.5 percent per year.

D. MANPOWER, EMPLOYMENT AND PRODUCTIVITY

In Saudi Arabia the relationship between economic growth and employment has been very direct and strong with far reaching implications for economic policy.

In the Fourth Plan, employment is planned to serve the needs of structural change and to contribute to greater efficiency in all sectors of the economy

- The main tragets are:
  - — productivity growth is envisaged at 4 percent per year;
  - — the net result of increased productivity and output will be a 5.1 percent reduction in total civilian employment from 4,446,000 in 1404/5 to 4,220,500 in 1409/10;
  - — 600,000 foreign workers are expected to return home during the five year period, while 374,700 Saudis will newly enter the labor force; the share of Saudis in the labor force will increase from 40.2 percent in 1404/05 to 51.2 percent by 1409/10;
  - — the greatest decline in employment will be among unskilled workers whose numbers will be reduced by 195,300, a change of 13.9 percent over the five years;
  - — all new employment will be in the private sector; public sector employment is expected to remain at its percent level with continued replacement of foreign staff.

- These new conditions mean that:
  - — Saudis entering the labor market will have to possess the education and skills required by the private sector, while their remuneration, motivation and attitude to work will have to reflect the realities of the private sector;
  - — the attainment of the labor market objectives will depend largely on the private sector.

- Higher productivity and consequent release of foreign labor will come from market pressures and opportunities and government action to support Saudi new entrants to the labor market to obtain or improve the necessary vocational skills; to specify conditions for female employment; and to limit new employment of expatriates to the growth sectors (agriculture, manufacturing, financial and business services).

E. FOREIGN TRADE

The economy of Saudi Arabia is very closely linked to the world economy. Exports currently represent 42 percent of the Gross Domestic Product, while imports are 72 percent of the non-oil GDP. During the Fourth Plan, the export / GDP ratio is expected to decline to 40 percent and the import / non-oil GDP ratio is estimated to come down to about 50 percent, in current prices.

F. STRUCTURAL CHANGE IN GDP EXPENDITURE

Expenditure on Gross Domestic Product during the Fourth Plan will be:

EXPENDITURE ON THE GROSS DOMESTIC PRODUCT DURING THE FOURTH PLAN

Table 6

Activity	GDP in Constant Prices (1399/1400) SR. Billion 1404/1405	SR. Billion 1409/1410	Annual Average Growth in percent.
CONSUMPTION	209.3	220.4	1.0
Government Final Consumption Expenditure	83.6	74.7	−2.2
Private Final Consumption Expenditure	125.7	145.7	3.0
GROSS FIXED CAPITAL FORMATION	99.5	118.5	3.6
Government Sectors	50.4	44.6	−2.4
Oil Sectors	13.9	17.2	4.4
Private Non-Oil Sectors	35.2	56.7	10.0
CHANGE IN STOCKS (1)	16.5	(−10.0)	—
DOMESTIC FINAL DEMAND	325.3	328.9	0.2
EXPORT OF GOODS AND SERVICES	111.4	148.0	5.8
LESS: IMPORTS OF GOODS AND SERVICES	152.6	131.0	−3.0
GROSS DOMESTIC PRODUCT(2)	284.1	345.9	4.0

(1) Including statistical discrepancy.
(2) Excluding import duties.

- **These estimates are based on:**
  - — a decline in the volume of public spending in step with the rate of imported inflation (anticipated at about 2.5 percent per year) countered by the increased purchasing power of the currency in respect of non-dollar imports;

— a growth in private consumption estimated at round 3.0 percent compared to 4.2 percent per year during the Third Plan;

— a growth rate of about 10 percent per year for private investment; although this is close to the 8.7 percent average rate of the Third Plan there are significant differences - it is considered unlikely that the commercial sectors will resume their previous substantial investment activities, and the gap will be filled by manufacturing and other productive sector projects; secondly there is a higher base level for the the same percentage growth rate, hence the volume of private investment will be greater in the Fourth Plan;

— oil sector investment will increase at 4.4 percent per year due to major capital programs by Aramco and Petromin;

The residual balance of expenditure on GDP comes from 3 percent average annual decline in volume of imports, reflecting changes in the imports / non-oil GDP ratio, lower levels of private consumption and direct government investment.

In the event that imports do not fall as expected while private investment remains high, the need for repatriation of private funds held abroad will have to be considered.

G. THE SECOND PHASE OF DIVERSIFICATION

After one of the most severe recessionary periods in the world economy, the Saudi economy is now in the state from which it can both adjust to the less favourable demand conditions in the oil markets, and start to implement the second phase of diversification through selective growth.

In the context of the uncertainties of international oil markets, and of the near completion of domestic infrastructural development, the Fourth Plan emphasises consolidation and structural change. The Plan itself serves to integrate the various objectives of development, prepares a new framework for implementation, and formulates policy.

- **Consolidation means:**

  — slower overall growth, in line with lower oil revenues and reductions in the number of foreign workers;

  — concentration on efficiency in all activities and in the use of material and human resources.

- **Structural change means:**

  — a renewed emphasis on the dynamic role of the private sector, with appropriate policies of support from the government;

  — growth in investment, output and productivity concentrated in the producing sectors (especially manufacturing and agriculture) and is the financial and business services sectors;

  — the channeling of direct and indirect financial and administrative support to priority sectors and activities.

Integration of objectives. Although the Fourth Plan has the selected growth sectors in its focus, it is a comprehensive plan for the whole economy and for society at large. This means that the Fourth Plan stands as a national program intergrating the following specific objectives:

— the appropriate balance between economic and social development efforts;

— the new relationship between government and private sector;

— the insistence on reducing the expatriate labour force and on increased rates of Saudization across the economy;

— the promotion of new import-substituting activities in agriculture, industry and selected service sectors;

— the emphasis on productivity improvements;

— the special support to maintenance operations throughout the economy.

- **The new framework for implementation. The Fourth Plan differs from preceding plans in the following ways:**

  — its output targets for the economy are based primarily on production expectations and less on programmed construction which is funded by government expenditure;

  — for the critical production activities, the Plan relies on the private sector which, in turn, expects favourable support conditions.

- **Policy formulation.** This new framwork for implementation is most likely to require new policy measures in support of the Plan, as well as the review of existing ones. The effectiveness of the present regulatory system and new policy formulation will be the subjects of review as part of the implementation of the Fourth Plan.

The Fourth Plan also differs from the preceding ones by being prepared at a time when many of the complexities of the Kingdom's development have

become more widely felt and their possible consequences better understood. The Plan evaluates achievements in many important areas from the point of view of potential and actual conflicts of priorities and other types of imbalances.

It will be the task of government agencies involved to ensure that the new framawork is comprehensive, functionally up-to-date and provides the proper scope for expansion for the economy's different participants, in both their domestic and international transactions.

VI. THE PRIVATE SECTOR

The private sector has a major role to play in the development process of the Kingdom of Saudi Arabia. This chapter serves three purposes:

— to place the private sector in prespective in terms of the scope and the nature of its activities, and its contribution to the development process of the Kingdom;

— to summarize the main changes that have taken place in the economy, and consider their effect on the future development of the private sector;

— to identify the main problems likely to confront the private sector during the Fourth Plan period, and to outline the govenment's main policy proposals and the changes required on the part of the private sector.

A. SCOPE AND NATURE OF PRIVATE SECTOR ACTIVITIES

One of the remarkable features of Saudi Arabia's development has been the partnership between the government and the private sector. The private sector has in the past:

— traditionally been active in commerce and import trade;

— been involved in early educational activities, electricity networks, and public works schemes;

— normally been complemented by government involvement, especially where large projects were concerned.

Today, there are few social and economic activities in which the private sector is not involved; this reflects the market orientation of the economy and the encouragement given to private enterprise and the profit motive. The key characteristics of the private sector have been its pattern of growth, expanding influence, and diversity of activities.

- **Private sector growth pattern.** There are three elements of the government's policy which have had a major influence on the private sector's pattern of growth:

— provision of a comprehensive, efficient and modern economic and social infrastructure; this in turn created a large increase in demand to which the domestic private sector, often in partnership with foreign companies, has responded; it created a seller's market and enabled the private sector to amass large capital resources and develop new business skills;

— commitment of the government to a market economy and private enterprise system, tailored to conditions in the Kingdom; a notable feature of the system is the provision of incentives to encourage the channeling of private enterprise into specific activities, and to ensure that private individuals and households are not penalized by reliance on the private sector's profit seeking;

— adherence to the government's policy of diversification, thereby reducing the economy's dependence on the oil sector and developing a strong domestic capability in the producing sectors; driven by the growing government sector demand, private enterprise has been encouraged to invest in new activities through the provision of attractive packages of investment incentives, soft loans, and the promotion of easy access to foreign technology and expertise.

The policies have combined to produce a business envirorment that is very attractive to both Saudi and foreign companies alike. The result has been a transformation of the economy in avery short time span, and the establishment of strong, influential and increasingly sophisticated private commercial and industrial sectors.

- **Expanding influence and diversity of the private sector.** The progress made by the private sector is demonstrated by almost all measures of performance, but especially by the following:

  — the number of private sector establishments more than doubled, to nearly 195,000, in the first four years of the Third Plan;

  — there is a bias toward small establishments, with over 80 percent of the establishment employing less than 5 persons and less than 2 percent more than 50 persons; this has tended to distribute the entrepreneurial spirit over a broad spectrum of the Saudi Arabian society;

  — the number of joint venture companies has increased markedly over the past decade; in 1403 (1983) joint ventures represented 25 percent of the total number of private companies;

  — the average investment size of Saudi companies has increased to SR. 9.2 million in 1403 (1983), while the average investment size of joint venture companies is about SR. 14 million; the relatively higher capitalization of the joint venture companies compared to domestic companies demonstrates the importance and success of the technology transfer associated with many joint ventures;

— the non-oil private sector Gross Domestic Product is estimated to have increased from SR. 75 billion to SR. 127 billion during the 1400-1404 (1980-84) period, thus averaging over 11 percent annual growth;

  — in terms of the total GDP, the private sector's share increased from 29 percent in 1400 (1980) to 35 percent in 1404 (1984); to some extent, this increase resulted from the fall in value of oil revenues rather than absolute growth of the private sector;

  — private sector increased its share of gross fixed capital formation to 35 percent by 1404 (1984), having invested SR. 173 billion during the 1400-1404 (1980-84) period;

  — the prevate sector new employs 88 percent of the total labour force in the Kingdom.

B. THE NEW ECONOMIC AND BUSINESS ENVIROMENT

The expansive environment of the last decade has ended, and now the Saudi Arabian private sector faces normal world conditions where business success will depend on tight financial controls, high standards of product quality and service, efficient and well planned marketing strategies. Consumers, for their part, are increasing their sophistication and quality consciousness.

The new set of problems now faces the private sector, reflecting the generally tighter business environment. Such pressure will force managers to raise the level of efficiency. As in other economies in periods of adjustment, it is expected that the more efficient firms will increase their market share, and a great deal of consolidation and rearrangement will probably take place in the Sadui private sector.

Examples of these problems are:

— the falling domestic demand has increased competition and business risks and emphasized the need for, and value of, effective marketing strategies;

— profit margins have narrowed, increasing the need for sound financial discipline;

— management expertise has become a precondition for corporate

survival - poor decision making can no longer be cushioned by high margins;

— substantial excess capacity now exists throughout the private sector; this capacity was installed in anticipation of continued high levels of economic activity.

By the end of the Third Plan, several initiatives to support the Saudi private sector have been taken by the government:

— open tendering on all government contracts has been introduced to enable equal opportunity for saudi companies;

— greater attention has been given to Council of Ministers'-resolution 124 requiring that at least 30 percent of the value of goverment contracts awarded to foreign companies will be provided by saudi companies;

— new procedures were introduced to speed up payments to the private sector;

— the military purchasing offset program was initiated to facilitate the transfer of technology to the kingdom.

C. FOURTH PLAN PERSPECTIVES

The Fourth Development Plan strategy gives greater emphasis than previous plans to the role of the private sector. Henceforth, the government will concentrate more on regulatory and promotional functions, allowing the private sector to meet the kingdom's demand for goods, services, and facilities.

The private sector is expected to help realize the development priorities of the Fourth Plan. The Fourth Plan is the strategic framework within which the private sector's initiatives can contribute to structural changes on an hitherto unkneown scale.

The second basic strategic principle for the Fourth Plan (outlined in chapter VII) indicates the government's overall policy of giving the private sector the opportunity to undertake many of the economic tasks of the government. The more specific aspects of the strategic principles relating to the private sector sector are:

- to increase opportunities for the private sector to acquire, manage, and operate projects currently operated by the government, that lower costs will result;
- to encourage the greater participation of the private sector in development financing through consideration of a number of initiatives:
  - review of regulations concerning the establishment of public joint stock companies;
  - encouragement for the formation of venture capital and public subscription investment companies;
  - promotion of appropriate financial intermediaries and financial instruments to help attract private capital and channel it to productive uses;
  - examination of ways to equalize the benefits and risks of investing in the domestic economy with those of private investment abroad;
  - through SAMA, encouraging commercial banks to participate to a greater extent in longer term finance, especially project finance;
  - improving the access of small and medium scale companies to sources of finance.
- To facilitate the restructuring of the private sector to meet the challenges of the more competitive business environment, the government has identified a series of specific action programs, including the following:
  - the chambers of commerce will act as a forum for private sector opinion, as an interface between the government and the private sector in planning issues, and provide advice to the private sector on government policy;
  - the provision of studies, consultation and non-financial assistance by the government to companies considering entering export markets;
  - establishment of national and regional trade exhibitions;
  - increasing focus on commercial and management subjects in the training curricula;
  - stricter requirements for economic feasibility studies and greater financial discipline from companies requiring loans from specialist lending institutions.

VII. SECTORAL DEVELOPMENT

The following chapters VIII-XIII cover the development strategies and programs for the six main socio-economic sectors: natural resources; the producing sectors; services; human resources; social development; and physical infrastructure.

A. STRATEGIC PRINCIPLES FOR SECTORAL DEVELOPMENT

All the development programs in the various sectors have been planned in full accordance with the long term objectives for the Fourth Development Plan (as given in Chapter III). The policy framework to guide the process of development towards these objectives is formed by eight basic strategic principles:

- **Economic efficiency.** Emphasis will be placed on improving the economic performance of the services, utilities and products which the government provides for citizens both directly (such as education and security services) and indirectly (such as electricity, transport and basic commodities provided by government-owned corporations or with government assistance).
- **Privatisation of economic activities.** The government will adopt a policy of giving the private sector the opportunity to undertake many of the economic tasks of the government, while it will not engage in any economic activity undertaken by the private sector.
- **Rationalisation of subsidies.** The system of direct and indirect subsidies on many goods and services provided by the state will be rationalised.
- **Predominance of economic considerations.** The consideration of economies shall predominate in the government's investment and expenditure decisions.
- **Development of Saudi manpower.** The development of Saudi manpower shall be continued through the evaluation of educational and training programs and curricula as well as by their further development or modification, in conformity with the Islamic sharia, with the changing needs of society and with the requirements of the development process.
- **Social development.** Attention will be given to the development of Saudi society, to the provision of social welfare and health care for all, and to the support given to society's participation in the implementation of the Plan programs as well as in reaping the benefits of development.
- **Defense and security of the nation.** In order to fulfill the strategic goals to defend the Faith and the nation, the defense and security agencies shall plan their strategy in order to ensure the defense of the nation and shall submit that strategy to the National Security Council preparatory to presenting it for consideration to the Council of Ministers.
- **Fiscal balance.** A fiscal policy shall be adopted which keeps the level of expenditure in line with the government's revenues.

These eight basic strategic principles encapsulate a total of 61 more detailed polices. Together, they all form a comprehensive policy framework which determines the direction and focus of government expenditure and development effort.

B. STRATEGIC THEMES FOR SECTORAL DEVELOPMENT

The plans for each socioeconomic sector were designed to maximise the contribution of the sector to the overall development strategy. Accordingly, the plans reflect three major themes in the econonmic strategy:

- **Structural change,** to be attained through differential growth rates among the various sectors, with higher growth rates for the key producing sectors (industry, agrieylture, financial services) and lower rates for other sectors, especially physical infrastructure. These higher growth rates in the producing sectors will progressively reduce, and in the long term largely replace, the function of government expenditure as the primary vehicle for the growth of other sectors of the economy, and they will encourage these other sectors by a broader pattern of demand which will stimulate linkages throughout the economy.
- **Consolidation** of the past achievements, through concentrating on efficiency in all activities and in the use of material and human resources.
- **Enhanced role for the private sector** to fulfill the critical production activities necessary for the structural diversification of the economy.

In addition to the objectives which are encompassed by these three major themes, the Fourth Plan will integrate certain other specific objectives:

- an appropriate balance between economic and social development;
- The reduction of the expatriate labor force;
- the promotion of viable import substitution especially in agriculture, industry and selected service activities;
- the speeial emphasis on maintenance of the nation's fixed capital in all sectors.

VIII. NATURAL RESOURCES

- **The natural resources Sectors include** water, energy resources such as oil, gas and solar power, and minerals. The Kingdom is very well endowed with energy resources; there is also increasing evidence of extensive rich mineral deposits -but water is a scarce resource, forming a major constraint to development in some areas.

The combination of abundance and scarcity means that the main planning guidelines for the natural resources sectors are the strategic objective to reduce dependence of the production and export of crude oil; and the principle of efficiency, especially in water use and the reduction of subsidies. The importance of technology for greater efficiency is reflected in policies to support investment is solar energy and the use of saline water.

A. WATER

- **The principal government agencies** involved in the planning, management, development and distribution of water are: the Ministry of Agriculture and Water, the Saline Water Conversion Corporation, the Ministry of Municipal and Rural Affairs, the Al-Hassa Irrigation and Drainage Authority.

- **The key issues for water development are:**

  — the resources-demand balance, in particular the very rapid rise of agricultural water demand;

  — the co-ordination of water use;

  — conservation of water through a progressive tariff system;

  — the need for reassessment of the institutional framework of water administration;

  — balanced development in all regions to meet the basic water needs of the population.

- **The water development strategy** emphasises rational utilization of scarce water resources through conservation, strict regional water management, priorities in water use, the introduction of a tariff system and closer co-ordination of agricultural and water development programs. There is also emphasis on advanced technology to develop renewable water resources, such as desalination, recycled water and surface water collection.

The detailed policy measures, consumption levels and projects will be incorporated in the National Water Plan to be prepared in the first years of the Fourth Plan period.

- **The Objectives and Policies for water resources will be:**

  — to meet the present and future water needs of society;

  — to limit the development of all water resources to prudent levels in accordance with long term needs;

  — to enhance the utilisation of existing resources;

  — to co-ordinate development and utilisation of resources under the National Water Plan;

  — to establish administsative units for the enforcement of laws and regulations in accordance with established priorities for water use;

  — to monitor consumption through water meters and a progressive tariff system;

  — to restrict pumping rates in vulnerable areas;

  — to introduce water saving techniques through national specifications and standards.

- **The main development programs will be:**

  — water management systems will be improved and extended, including the implementation of National and Regional Water Plans and the National Water Code;

  — water resource development will be expanded with emphasis on surface water resources, the use of technology for reclamation of wastewater, the establishment of a water data bank;

  — drinking water supply will be administered by the Ministry of Municipal and Rural Affairs and concentrate on networks for small towns and villages;

  — operation and maintenance programs will ensure the efficient supply and distribution of water with minimum waste and emphasise preventive maintenance.

- **The Planned Government Expenditures on water will be SR. 31,789.7 million.**

- **The private sector involvement** in water development will be extensive, both for the implementation of projects, conservation in water use, and the introduction of water-saving technology.

B.ENERGY

The Kingdom is genrously endowed with energy resources: crude oil and gas, solar energy, and coal deposits.

- **The main agencies** involved in development of these resources form a partnership between the public and private sectors. The government-owned Aramco, the Arabian Oil Company and Getty Oil Company are responsible for crude oil production, while refined and blended oil products are produced and sold by Petromin, multinational oil companies and the domestic private sector. Solar energy research is carried out by the Saudi Arabian National Center for Science and Technology (SANCST), while equipment is produced by the private sector.

- **The key issues** for the energy sector are:

  — the active marketing of refined products in the face of world overcapacity, while production processes will need to be integrated to attain flexibility;

  — coordination of storage, distribution and refining will need to be maintained for proper utilisation of all facilities;

  — flexibility of crude oil production requires the development of non-associated gas production;

  — government support is still required to sustain solar energy research until it can compete with the low prices of conventional sources.

- **The strategic objectives and policies** will be:

  — to conserve and manage the Kingdom's hydrocarbon resources to achieve maximum benefits in the long run;

  — to ensure international trade relations are compatible with national objectives for oil and gas development;

  — to develop solar energy as one of the alternative energy sources;

  — to establish the required conditions for the efficient utilisation of nuclear energy for peaceful purposes.

- **The main development programs** will be:

Oil

  — new refineries will be constructed: a 303 tbcd export refinery at rabigh, increasing export capacity to 1,333 tbcd; a new 1.6 mby oil refinery at Yanbu (Luberef II), increasing total capacity to 3.1 mby; a new 1 mby lube blending plant will be built by Petromin at Yanbu and a further 700,000 barrels per year added by the private sector, increasing total capacity to 3.2 mby;

  — new storage and distribution systems will be constructed;

  — exploration will consist of seismic surveys, geological studies and exploratory drilling;

  — management and operations programs will improve efficiency and promote marketing;

  — oil reservoir production and optimisation studies will be undertaken;

  — maintenance schemes will be geared to long term cost-effectiveness;

  — marine pollution prevention programs will be increased;

Gas

  — the gas gathering scheme will be completed, linking gas and oil separation plants to the gathering centers;

  — natural gas conservation studies will be undertaken;

  — pipeline maintenance and ongoing work will be completed;

solar and nuclear energy

  — the ongoing research programs on solar greenhouses, water desalination, turbine electric power plant and village electrification will be continued;

  — a new program for the solar production of hydrogen will be initiated;

  — nuclear energy, safety and training programs will be commenced, with a scientific and technical capability established at SANCST to provide consultation in nuclear energy.

- **the planned government expenditures** on energy will be SR 18,821.0 million.

- **the private sector** has considerable scope in domestic gas and lube oil retailing, in solar energy projects, and supplying the services, equipment and construction required by the energy sectors.

- **G.C.C. considerations:** energy policy is coordinated through OPEC and OAPEC rather than the GCC; nevertheless some particular projects are specific to the GCC.

C. MINERAL RESOURCES AND MINING

Many minerals have been discovered in Saudi Arabia, including gold, silver, copper, zinc, lead, bauxite, rare metals, industrial minerals, magnesite and coal. Some of these are of major long term importance for the nation.

- **The principal government agencies** are the Deputy Ministry for Mineral Resources (DMMR) of the Ministry of Petroleum which fulfills the role of national geologic survey and mineral exploration agency. The commercial exploitation of minerals is carried out by private enterprise and Petromin, while the Saudi — Sudanese Joint Red Sea Commission is actively exploring the sea-bed resources of the Red Sea.
- **The key issues** for the minerals sector are:
  - joint ventures with expeienced international mining companies will be required for the inputs of capital, technology and knowhow;
  - the mining code needs revision in the face of major changes in the economy over the last ten years;
  - the provision of infrastructure is critical for the efficient exploitation of remote deposits, and there is scope for the government to contribute to the costs.
- **The development strategy** for the mineral sector will be to encourage the discovery and utilisation of deposits. This will be supported by a shift from basic geologic research to minerals exploration, with detailed evaluation of proven reserves.
- **The main development programs** will be:
  - minerals exploration, with gold, silver, copper, zinc and tintungsten as prime targets, and increasing efforts directed towards the Cover Rocks area;
  - mining development, to include detailed evaluation of As Zubirah bauxite deposits, high grade phosphorite in Sirhan-Turayf, pilot plant testing of Wadi Sawawin iron ore deposits, technical and economic appraisal of Khnnaginiyah zinc deposits:
  - geologic surveys will provide the information basis for mineral exploration;
  - geological services to the community will provide information to construction projects and advice on geohazards;
  - exploration geo-chemistry, geophysics and drilling, with laboratories and equipment will provide the specialised equipment required for mineral exploration;
  - Petromin will construct the gold mine and concetration plant at Mahd Al-Dhahab, commencing production in 1407; also detailed exploration will commence at Nuqrah As Safra;
  - the Saudi-Sudanese Red Sea Commission Will commence pilot operations at the Red Sea Atlantis II deposits Containing zinc, silver, copper, gold and cobalt.
- **The planned government expenditures** on minerals will be SR 4,426.9 million.
- **Private sector considerations.** The goverment intends to create an environment conducive to investment in minerals, and hopes that the private sector will respond positively, for example by recognising the scope in surface mining and quarrying, the development of zinc for hot dip galvanizing, copper for electrical fitments, silicon and magnesite for alloys.

IX. THE PRODUCING SECTORS

The non-oil producing sectors include agriculture, industry, electricity, construction and the industrial cities at Jubail and Yanbu. These are all in a pivotal position in national development strategy: agriculture and industry because they are the critical growth sectors for the future (together with financial and business services), construction because it has been the main engine of non-oil development in the past two decades, but, being heavily dependent on government expenditure, cannot sustain autonomous growth in the future. Electricity is a prerequisite both for economic production and for good living standards for citizens, While Jubail and Yanbu are the locations for the vital petrochemicals industries.

A. AGRICULTURE

- **The main government agencies** involved in agriculture are: the Ministry of Agriculture and Water, the Al-Hassa Irrigation and Drainage Authority, the Saudi Arabian Agricultural Bank, the Grain Silos and Flour Mills Organization. In addition there are major agricultural development companies such as the National Agricultural Development Company, the Saudi Fisheries Company, and the Arab Company for Livestock Development, in which the Ministry of Agriculture has ownership participation.

- **The key issues** for agriculture are:

  — the expansion of wheat production has been extremely successful, but caused rapid depletion of non-renewable water and a wheat surplus; hence, modification in the structure of incentives were introduced to prevent distortions in the economy;

  — the preferred balance between the large scale modern sector and the more traditional agricultural sector has important implications for credit policy; also, loan repayment rates by small farmers could be improved by linking credit to more effective management advice and supervision;

  — the marketing problems of small farmers are exacerbated seasonality, and government aids such as support prices and storage facillities have been limited to wheat in the past;

  — information and policy analysis from trained specialists are critical needs to deal with the complex issues of agricultural support policies;

  — subsidies require review, especially to ensure that increases of machinery and equipment are discouraged and proper maintenance stimulated.

- **The development strategy** gives high priority to agriculture to contribute to a diversified economic base:

  — the target growth rate is 6.0 per cent per year;

  — in 1400 constant prices the total contribution to GDP will rise from SR 7.1 billion in 1405 (4 percent of non-oil GDP) to SR 9.4 billion in 1410 (4.8 percent of non-oil GDP);

  — productivity is projected to increase at 4.5 percent per year.
  The growth of output through further land distribution will be tempered by the need to conserve water, thus expansion will be based mainly on productivity improvements.

- **The main objectives and policies** for agriculture will be:

  — to achieve a satisfactory rate of increase in farm output at minimal cost;

  — to achieve a broadly based improvement in the welfare of the rural population;

  — to raise the productive and marketing efficiency of agricultural producers and attract private capital investment;

  — to distribute arable land only in those areas with high potential renewable water resources;

  — to continue the various policies to increase efficiency and raise productivity;

- **The main development programs** will be:

  — agricultural development through establishent and operation of necessary infrastructure;

  — off-farm services such as crop protection, extension, information, assistance to cooperatives and rural communities:

  — subsidies will be continued for dates, palms, grains and fertiliser as an incentive to increase production;

  — research will be geared mainly towards crop and livestock prodction, fisheries and range manaqement; suitable agricultural technology;

economic studies and statistical surveys will also be undertaken including a comprehensive agricultural census;

— grain silos will be expanded from 955,000 tons to 1.8 million tons.

- **The planned government expenditures** (including wheat subsidies) will be SR 10,810.3 million.
- **The private sector** is heavily involved in agriculture and is responsible for all productive ventures.
- **The GCC** will increase coordination of agricultural policies, and the feasibility of a strategic food reserve will be examined.

B. INDUSTRY

Manufacturing industry essentially has three components: the basic industries (petrochemicals and heavy metals); the general manufacturing sector, managed by private enterprise; and the small scale workshops involved in repair and limited production.

- **The main government agencies** concerned with industry are: the Ministry of Industry and Electricity, which licenses the basic and general manufacturing projects, administers industrial estates and authorises preferential purchasing by State organisations and tariff protection in a few instances; the Saudi Arabian Basic Industries Corporation, which manages the basic industries projects; the Saudi Industrial Development Fund, which provides discretionary low cost finance for factories with a license from the Ministry of Industry and Electricity.
- The key issues for industry are:
  - — the need to establish capital intensive factories and reduce the large numbers of foreign workers recruited during the Third Plan period;
  - — the importance of planning productive projects with careful feasibility studies based on short and long term considerations, to avoid the problems of overcapacity;
  - — protective pressures have been arising in many countries of the world; however the Saudi Arabian government is committed to free trade recognizing that increased protection induces inefficiency;
  - — the structure of incentives is presently geared to new operations rather than improved output performance by established factories, hence there is a need to shift the emphasis to stimulating greater efficiency;
  - — the regional concentraion of industry is now largely in the central East-West corridor of the Kingdom, while the development strategy calls for selecting development centers in areas capable of supporting praductive projects; therefore, new industries and support facilities will be selected and distributed accordingly;
  - — *export markets are not easily penetrated by new industries, nevertheless* they are important for industrial development programs and growth; hence special facilities will be arranged;
  - — the private sector deserves special consideration in industry to increase its involvement in SABIC basic industry projects, increase its efficiency and encourage investment in maintenance;
  - — the transfer of technology and training of Saudi youth is no less important than profits for industrial projects, hence training should receive top priority;
  - — coordination with GCC countries will be sustained to set up large scale industries and establish regional projects, especially in basic chemical industries.
- **The development strategy** gives the industrial sector a prominent role in contributing to economic growth:
  - — the target growth rate is 15.5 per cent per year;
  - — in 1400 constant prices the total contribution to GDP will rise from SR 12.5 billion (7 per cent of non-oil GDP) in 1405 to SR 25.76 billion (13 per cent of non-oil GDP) by 1410, of which basic industries will account for approximately 20 per cent;
  - — productivity is planned to increase at 5 per cent per year.

    These high growth rates will be sustained by continuing structural changes and new activities established during the Third Plan period, but mainly by six sources of new industrial growth:
  - — SABIC projects providing materials for domestic industries and increased exports;
  - — the development of second generation industries founded on the basic industries and on associated support industries;
  - — increased import substitution, in combination with technology transfer from abroad;
  - — development of intersectoral linkages to exploit opportunities from mineral resources, agriculture and new technologies;
  - — continued expansion of non-hydrocarbon exports;

— development of regionally based industries in conjunction with other GCC countries.

- **The main objectives and policies** are;
  - — to contribute to the Kingdom's growth and process of diversification through continuing programs of industrialisation;
  - — to develop and add value to hydrocarbon and mineral resources;
  - — to train the human resources of Saudi Arabia in the industrialisation process;
  - — to improve the efficiency and productivity of existing industrial activities;
  - — to seek suitable joint venture projects with other GCC states, and encourage foreign capital and technology in industrial projects in collaboration with Saudi investors;
  - — to continue to provide appropriate industrial infrastructure and encourage support activities.
- **The main development programs** will be:
  new SABIC projects include:
  - — methyl tertiary butylether (MTBE) plant with 500,000 ton capacity;
  - — butadiene plant with 125,000 tons capacity;
  - — butene-1 unit with 80,000 tons capacity;
  - — vinyl chloride monomer (VCM) unit with 300,000 tons capacity;
  - — polyvinyl chloride (PVC) plant with 200,000 tons capacity;
  - — projects under study or consideration include propylene, single cell protein, additional ethylene and fertilizer plants, and a rolled steel mill;
- **Industrial development programs include:**
  - — industrial extension service, including technology research and adaptation, and factory modernization;
  - — export promotion, with permanent export industries exhibition centers in Riyadh, Jeddah, Dammam, and supplementary export credit and insurance facilities;
  - — pre-investment service to assist new investors, especially in selection of appropriate technology;
  - — industrial promotion, with mass media information campaigns;
  - — industrial surveys and studies, especially on investment opportunities;
  - — education and training, with on-the job training schemes by teams at Riyadh, Jeddah, Dammam.
- **The planned government expenditures** will be SR 4,241.0 million.
- **Private sector considerations.** It has always been a basic principle that manufacturing will be undertaken by the private sector, except for those projects which are too large for private investors. Hence the government offers a wide range of facilities and incentives. In turn the government hopes the private sector will respond with the use of advanced technology, of Saudi manpower, and with cooperation among investors so that companies may integrate and regroup to allow the necessary economies of scale and risk sharing.
- **Coordination with GCC** countries in the fields of industrial regulations, procedures and incentives are under review. Major projects are already coordinated by the GCC secretariat and the Gulf Organisation for Industrial Consulting. The formation of the GCC offers a valuable opportunity for all industralists to expand their markets.

C. ELECTRIC POWER

- **The main government agencies** concerned with electricity are: the Ministry of Industry and Electricity, which is responsible for overall regulation of the sector; ten independent electricity companies - the consolidated companies in the Central, West, East and Southern Regions, and six small companies in the North; the General Electricity Corporation, which operates services outside the domain of the six companies in the North; the Saline Water Conversion Corporation which generates electricity in dual purpose power/desalination plants.
- **The key issues** for electricity are concerned more with improving efficiency and conservation than installing additional capacity.
- **The development strategy** is to concentrate on improvements in efficiency, planning and conservation and to coordinate electricity policies with those for other energy sources;
  - — the main Fourth Plan objective is to achieve the long standing goal of full electrification of the Kingdom;
  - — the targets for electrification are:

	Actual 1404	Forecast 1410
Number of customers (thousands)	1,527	2,354
Population served (millions)	9.03	13.6
Peak load (MW)	8,336	15,691
Installed Capacity (MW) of which :	12,041(1)	20,050(1)
— Steam Electric (MW)	2,600(1)	6,140
— GT and Diesel (MW)	9,441	13,910

(1) excluding SWCC capacity

- **The main development programs** will be:
  - — generation program with 8,000 MW of new capacity, 50 percent steam-based as a long term objective;
  - — transmission and sub-transmission programs will continue the interconnection of load and generation centers;
  - — the distribution program will serve about 828,000 new customers;
  - — administration and human resource development will include training around 19,000 staff.

- **Planned goverment expenditure** will be SR 41,931 million with revenues of SR 19,770 million.

- **The private sector** has considerable scope for the production and maintenance of electrical equipment, and also is expected to contribute to conservation through responsible use of electricity.

- **Coordination with GCC** countries will be arranged through the eventual unification of all electricity tariffs; adoption of common conservation measures; the investigation of interconnected transmission networks; and the proposed unification of electrical standards.

D. CONSTRUCTION

The construction industry is almost entirely in the private sector, while almost every branch of the government uses the services of construction contractors. The Deputy Ministry of Contractors Classification of the Ministry of Public Works and Housing is the main agency responsible for regulating the construction sector.

- **The key issues** for the sector relate to the optimum utilisation of manpower resources leaving the construction industry as the level of activity declines. Most of the workers are from other countries and will return home, while the Saudi contractors will need to diversify into other fields of activity.

- **The development strtegy** is that there will be a decline in construction activity as part of the structural change in the economy. The government will reduce the impact of this decline by further encouraging Saudization of the construction industry and diversification into operation and maintenance. The economic targets for the sector are:
  - — the contribution to GDP is planned to decline at an annual rate of 2.8 per cent;
  - — the total contribution to GDP will decline from SR 40.2 billion (23.5 per cent of non-oil GDP) in 1405 to SR 34.8 billion (17.7 per cent of non-oil GDP) by 1410, in 1400 prices.

- **The main objectives and policies** will be to:
  - — strengthen the Saudi-owned construction industry;
  - — improve the quality and reduce the costs of construction and maintenance;
  - — increase productivity and capabilities of contractors.

- **The main development programs and projects** in the construction sector are implemented by a large number of government agencies and the private sector. Some specific measures by the government will include:
  - — stricter interpretation and enforcement of Resolution 124 (the thirty per cent rule) and the requirement that supplies and services are procured from Saudi firms;
  - — open tendering, and the division of large contracts into smaller parcels;
  - — revision and extension of the contractor classification program.

- **Planned government expenditure** on administration for the construction industry will be Sr 72.0 million.

- **The private sector** will need to recognize the two main tasks facing Saudi contractors; first to maximise their share in construction, including maintenance, second to adjust to the changed market conditions. As construction declines, the independent need for operating and maintaining the Kingdom's infrastructure has increased.

E. THE INDUSTRIAL CITIES AT JUBAIL AND YANBU

The Jubail and Yanbu complexes are the focal point of the development of hydrocarbon-based and energy intensive industries. The main government agency concerned is the Royal Commission for Jubail and Yanbu which constructs and administers the two industrial cities.

- **The key issues** for Jubail and Yanbu are diverse:
  - — the provision of affordable housing for low-income persons;

— transfer of operation and maintenance activities to the private sector;
— the establishment of appropriate and efficient secondary and support industries;
— the provision of facilities, services, training and business opportunities to attract Saudis to the areas;
— the provision of adequate but not excessive community and industrial infrastructure.

- **The main development programs** will be:
  — public works programs will include studies and designs prepared for the construction of roads, water systems, waste disposal systems at Jubail and Yanbu; industrial parks, camps and an airport will be constructed at Jubail; flood protection systems and power-telecommunication cable ducts will be introduced at Yanbu;
  — the training and health program will include the completion of vocational training institutes, and the building of health clinics, hospitals ans schools;
  — housing and community facilities will require the construction of approximately 3,500 housing units, religious facilities, commercial buildings, recreational and other public facilities; also, site development for new communities, districts, and 13,000 serviced sites for private housing construction;
  — telecommunications equipment will be installed or expanded with telephone, telex, cable, television, mobile radio and a computer network installed;
  — the ports and materials handling systems will be completed.

- **The total government expenditures** at Jubail and Yanbu will be SR 30,000 million.

- **The private sector** will be invited to take over responsibility where appropriate, especially in ownership and management opportunities in secondary industries, and the establishment of a strong retail and commercial base, through incentives to Saudi investors and attractive lease contracts.

X. THE SERVICES SECTORS

The group of services sectors comprises a wide range of public and private activities: wholesale and retail trade, storage, hotels and restaurants, financial and business services, banking, distribution, and personal services. The government agencies which provide services direct to the business community and the government alike are concerned with specialised funding, specifications and standards, statistical information, meteorology and the environment. All these may be grouped under the main categories of commerce, banking and finance, and government services.

While the long term goals emphasise diversification of the economic base in the natural resources and producing sectors, the services also have a significant contribution to make to diversification, both by expanding their own activities to broaden the economy as a whole, by facilitating the growth of industry, agriculture and mining and by assisting the efficient operations of other sectors.

The government services will be guided by the general policies to improve efficiency, to continue the development of environmental programs, and by the specific policy of standardising the technical specifications of projects to facilitate and reduce the costs of maintenance.

A. commercial services

This sector comprises the distributive trades, hotels and restaurants, storage, warehousing and business services.

- **The main government agencies** involved are: the Ministry of Commerce, which has the overall regulatory responsibility for the sector; the Grain Silos and Flour Mills Organisation for grain storage; the Saudi Arabian Standards Organisation for consumer protection; the private Chambers of Commerce and Industry also play a critical role in the sector.

- **The key issues for** the commercial services are:
  — over - capacity in storage and hotels, with fierce competition in a shrinking market;
  — deficiencies in the present regulatory system concerning both coverage and administrative procedures;
  — marketing and promotional institutions are needed to improve sales in the highly competitive domestic market;
  — the insurance market requires supervision and regulation;

- **The development strategy** is based on a recognition of the changing commercial environment. Taken together, the commercial services comprise the largest single sector in terms of GDP (after the oil sector), with 19 per cent share. Much of the development to date has been reactive to sudden opportunities and changing consumer demand. With the reduction in government expenditure and increased competition, the commercial sector will require a more proactive approach and higher levels of efficiency and productivity. Hence the Fourth Plan strategy for the government focuses on promoting assistance to the private sector in meeting and overcoming these new challenges. The target growth rates are:
  - 2.5 per cent per year for the distributive trades, restaurants and hotels;
  - 5 per cent per year for storage (together with transport and communications);
  - 9 percent per year for insurance and business services (together with financial services);
  - the real estate sector, on the other hand, is projected to remain static in growth terms.
- **The objectives and policies** will be:
  - to increase the involvement of the private sector in activities currently undertaken by the government;
  - to increase exports;
  - to maintain high standards of supply and consumer protection;
  - to ensure that the regulatory framework is consistent with the efficient performance of the commercial sector;
  - to establish joint stock companies so as to increase opportunities for Saudi nationals to participate in development;
  - to monitor strategic stock piles of commodities and food supplies and ensure that adequate warehousing and storage facilities exist.
- **The main government development programs** will be:
  - sector coordination, regulation and monitoring of commercial activity will be maintained by the Ministry of Commerce;
  - trade development will be encouraged by studies to identify investment projects, improve productivity in the trade sector, promote investment, collect and disseminate information for the private sector; in particular, an Export Promotion Board will be established;
  - consumer protection will be continued, new quality control laboratories will be established in all main ports and new standards prepared;
  - warehousing and storage will be monitored; a further 900,000 tons of grain silos capacity will be added, and the animal feed industry expanded;
  - finance and business services will be given priority attention; regulatory bodies will be established to oversee the activities of the professions, commencing with an organisation for chartered accountants; special studies will be made concerning the domestic insurance industry, the establishment of a stock exchange and of new financial intermediaries;
  - the Chambers of Commerce and Industry will continue to focus attention on productivity and training; new Chambers will be established in regions where there is a need, and studies will be undertaken to indentify how the Chambers might assist to develop marketing institutions and investment opportunities;
  - hotels and motels will have new regulations drafted; attention will be given to training Saudi nationals and encouraging investment in areas where there are insufficient services.
- **The planned government expenditure** will be SR 825.0 million.
- **Private sector participation** is intrinsic to the whole sector's activities.
- **GCC coordination** will be improved with particular reference to the regulatory framework and strategic food reserves.

B. BANKING AND FINANCE

- ***The domestic financial system.*** *This largely consists of eleven commercial* banks, which are regulated by the Saudi Arabian Monetary Agency (the central bank), and four government owned specialised credit institutions - the Saudi Industrial Development Fund, the Real Estate Development Fund, The Saudi Credit Bank, the Saudi Arabian Agricultural Bank. In addition there are the Public Investment Fund and the Specialist Funding Programs of the Ministry of Finance and National Economy. No formal capital or money markets exist in the Kingdom; the principal responsibility for mobilising and distributing private capital rests with the commercial banks.
- **The key issues** for the financial sector are:
  - the need to channel private capital into domestic development projects;
  - in turn, this requires the creation of financial intermediaries, new investment instruments, investment funds and venture capital companies, and institutions which can convert domestic private capital into appropriately structured commercial finance;
  - the prevailing attitudes to long term lending among commercial banks need to change, with positive action taken to strengthen their capabilities in project finance;
  - the government also needs to involve the commercial banks in fund lending to a greater extent than at present;

— the investors themselves will be required to improve their research and presentation of applications for project finance, to seek out a regular flow of potential projects and accept a greater degree of financial discipline.

- **The development strategy** for the Fourth Plan is marked by a major shift in the evolution of the financial and banking sector. Falling oil revenues highlight the need to harness private capital while the emphasis on private enterprise to maintain the pace of growth will place new demands on the financial sector to increase its involvement in private projects. Thus the strategy is to diversify the financial structure and increase the range of services and capabilities within the country, while strengthening the effectiveness of the system to better utilize private resources for development needs.

  The target for the banking and financial sector is to grow at an average annual rate of 9.0 per cent, and raise its contribution to GDP from SR 8.46 billion (5 per cent of non-oil GDP) to SR 13.0 billion (6.6 per cent of non-oil GDP) in 1400 prices.

- **The objectives and policies** will be:
  — to ensure that the financial sector recognises, anticipates and develops in accordance with the growing and changing requirements of the economy as a whole (and sets the lead to some extent);
  — to promote the incorporation of national financial institutions and more joint stock companies;
  — to create a system under government supervision for the exchange of company shares;
  — to urge commercial banks to extend credit facilities to production projects instead of concentrating on import trade.
  — to encourage and induce investment in feasible worthwhile industries, and promote the adoption of new technologies;
  — to encourage more rational pre-investment project evaluation.

- **The main development programs** will be:
  — improvements in efficiency of banking procedures and systems; particular attention will be paid to the project promotion function of the Saudi Industrial Development Fund with the introduction of a project identification unit and information service;
  — the ongoing studies of the stock exchange will be completed;
  — small business lending will be improved and the most appropriate schemes will be studied and introduced;

- The government loan targets for the specialized financial institutions are:

Saudi Arabian Agricultural Bank	SR 10,150 millions
Saudi Credit Bank	SR 1,250 millions
Saudi Industrial Development Fund	SR 7,500 millions
Real Estate Development Fund	SR 21,000 millions
Specialist Funding Programs	SR 1,500 millions
Public Investment Fund	SR 18,700 millions
Total	**SR 60,100 millions**

- **Private Sector Considerations.** The banking sector will be expected to respond to the development needs of the economy by substantially increasing lending for project finance to complement lending by government institutions. Opportunities also exist to establish new financial intermediaries and acceptable consumer credit facilities.

- **GCC Considerations.** Discussion and studies are at a preliminary stage concerning the establishment of a commom currency unit for the GCC states. In the meantime, the respective central banks and finance ministries will coordinate banking procedures to allow autonomous yet compatible financial development in the member states.

C. GOVERNMENT SERVICES

- **The main government support and regulatory agencies** are the Saudi Arabian Standards Organisation (SASO); the Meteorology and Environmental Protection Agency (MEPA); The Central Department of Statistics (CDS), *with the National Computer Center.*
- The key issues concerning the activities of these agencies are:
  — although compliance with approved Saudi standards is obligatory, SASO has no direct responsibility for enforcement; similarly, MEPA needs to strengthen its capability to enforce environmental protection standard;
  — adoption of a full testing and consultation procedure slows down the processing of standards, hence abbreviated procedures may be required for some items;
  — the capabilities of CDS and MEPA to collect, analyse and disseminate information become increasingly significant as the economy and environmental conditions become more complex.
- **The development strategy** for these agencies is to improve their efficiency in order to raise the quality of life and of general development activities throughout the economy.

- **The main objectives and policies** will be:
  — to develop a body of approved Saudi standards appropriate to the