CHAPTER 12

HUMAN RESOURCES DEVELOPMENT
12. HUMAN RESOURCES DEVELOPMENT

This chapter presents the main objectives, policies and programs for the development of the Kingdom’s human resources at all levels of general education, higher education, technical education and vocational training. The chapter also addresses manpower utilization from the viewpoint of employment regulations and services, as well as the contribution of science and technology to socioeconomic development. Key issues in the development and utilization of human resources during the Fifth Plan period are also discussed in this chapter.

12.1 EDUCATION

12.1.1 Role and Development Objectives

The material and social objectives of the education curriculum in the Kingdom are based on the Islamic values and cultural heritage of Saudi society, and constitute the cornerstone of long-term development. All previous development plans have placed emphasis on inculcating these values in citizens and on imparting to them the knowledge and skills that will enable them to participate effectively in all social, economic and cultural activities. The Fifth Plan reaffirms the Kingdom’s commitment to the full development of its people, particularly in its third and fourth strategic objectives:

- "to form a productive national work force by encouraging citizens to avail themselves of the benefits from the infrastructure and institutions provided for them by the State, ensuring their livelihood and rewarding them on the basis of their work;

- to develop human resources, thus ensuring a constant supply of manpower, upgrading its quality and improving its efficiency to meet the requirements of the national economy."

General education opportunities for boys and girls are provided through the Ministry of Education and the General Presidency for Girls Education, who also provide education and literacy programs for special groups such as the handicapped and adults. Other government agencies and the private sector are also involved in the provision of education services, while the preparation of teachers is undertaken by the teacher training institutes and intermediate colleges.

The government also provides post-secondary higher education opportunities through the universities and girls colleges (and their affiliated colleges), military and security colleges, and other government agencies. Figure 12.1 illustrates the education system in the Kingdom.
While the improvement of the education system is an ongoing process for the Kingdom’s educational institutions, the following objectives will guide the development of education in the Fifth Plan:

- to upgrade the efficiency of education;
- to ensure that general education is in accordance with the religious, economic and social needs of the Kingdom;
- to provide education facilities at minimum cost;
- to reduce illiteracy rates among citizens;
- to raise the quality, effectiveness and efficiency of education and the administrative performance of higher education institutions;
- to expand and diversify higher education programs and ensure that the activities of higher education institutions are responsive to the requirements of socioeconomic development;
- to improve coordination and cooperation amongst post-secondary education institutions;
- to continually encourage and develop scientific research activities;
- to provide all citizens of ability with opportunities to pursue a university education.

### 12.1.2 Achievements and Key Issues

As its key indicators show, the Kingdom’s educational system has continued to grow, in terms of both quality and quantity, during the Fourth Plan period. With the commitment to free education, total student enrollments in general education have grown more than fourfold over the last two decades, to over two million.

At the beginning of the First Plan, 7000 students were enrolled in the Kingdom’s higher education institutions. This number has increased more than sixteen times over the last four Plan periods, so that there are now more than 114,000 students (men and women) enrolled in these institutions. The number of women enrolled in the higher education system has increased from 400 to more than 48,000 over the same period.

During the Fourth Plan period (1404/05 to 1407/08) the general education system for boys and girls has witnessed a steady growth in numbers (see Table 12.1).
TABLE 12.1

Annual Growth Rates for General Education
1404/05 to 1407/08

<table>
<thead>
<tr>
<th></th>
<th>Elementary</th>
<th></th>
<th>Intermediate</th>
<th></th>
<th>Secondary</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
<td>Male</td>
<td>Female</td>
<td>Male</td>
<td>Female</td>
</tr>
<tr>
<td>Enrollment</td>
<td>5.7</td>
<td>8.7</td>
<td>7.0</td>
<td>10.8</td>
<td>9.7</td>
<td>11.8</td>
</tr>
<tr>
<td>New Entrants</td>
<td>6.2</td>
<td>7.0</td>
<td>6.9</td>
<td>10.0</td>
<td>13.0</td>
<td>10.8</td>
</tr>
<tr>
<td>Graduates</td>
<td>6.3</td>
<td>8.1</td>
<td>6.3</td>
<td>12.4</td>
<td>1.0</td>
<td>12.4</td>
</tr>
<tr>
<td>Classrooms</td>
<td>4.2</td>
<td>7.5</td>
<td>6.2</td>
<td>8.5</td>
<td>10.0</td>
<td>10.8</td>
</tr>
<tr>
<td>Saudi Teachers</td>
<td>7.2</td>
<td>15.5</td>
<td>17.3</td>
<td>18.3</td>
<td>23.6</td>
<td>32.2</td>
</tr>
<tr>
<td>All Teachers</td>
<td>3.7</td>
<td>11.9</td>
<td>6.3</td>
<td>10.0</td>
<td>8.1</td>
<td>12.2</td>
</tr>
</tbody>
</table>

In the higher education sector, with the exception of non-Saudi faculty members, all indicators have shown a marked annual increase during the period 1404/05 to 1407/08 (see Table 12.2).

TABLE 12.2

Annual Growth Rates for Higher Education
1404/05 to 1407/08

<table>
<thead>
<tr>
<th></th>
<th>Bachelor Level</th>
<th>Postgraduate</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>Enrollment</td>
<td>7.4</td>
<td>8.7</td>
</tr>
<tr>
<td>New Entrants</td>
<td>4.5</td>
<td>17.1</td>
</tr>
<tr>
<td>Graduates</td>
<td>30.0</td>
<td>7.0</td>
</tr>
<tr>
<td>Saudi Faculty</td>
<td>5.5</td>
<td>—</td>
</tr>
<tr>
<td>Non-Saudi Faculty</td>
<td>(4.3)</td>
<td>—</td>
</tr>
<tr>
<td>Administrative and Technical Staff</td>
<td>1.5</td>
<td>—</td>
</tr>
</tbody>
</table>
The rapid growth in student numbers has been accompanied by a similar expansion in the infrastructure of the Ministries of Education and Higher Education, the General Presidency of Girls Education and the girls colleges. Over the last two decades, the number of elementary schools for boys and girls increased from 1,824 to 8,426, the number of intermediate schools from 126 to 2,772, and the number of secondary schools from 23 to 1,171. This expansion was supported by substantial growth in public expenditure on education, which rose from less than SR 600 million in 1389/90 to almost SR 22 billion in 1409/10 — almost a 37-fold increase over the last four Plan periods.

The government provides free education for students at all levels, in addition to bursaries for students who attend schools far from their homes. University students receive financial bursaries, free housing, free meals and books, and are provided with transportation at subsidized prices, while female students are provided with free transportation.

In addition to the rapid growth witnessed at each level of education over the last two decades, the Fourth Plan period has seen a series of changes in the ongoing evaluation of education services, such as:

- the constant efforts to develop education in response to rapid economic and social change and to adapt to potential technological changes in the future;

- reviewing and developing the curriculum and training methods;

- an expansion in kindergarten programs;

- the growth in postgraduate study programs for Ph.D. and Master’s degrees;

- the use of advanced technology for program evaluation, educational guidance and psychological advice activities;

- the establishment of minimum educational standards for elementary school teachers.

**Key Issues**

Almost inevitably, this rapid expansion in services and institutions has been accompanied by the emergence of problems which are now constraining the overall effectiveness of the system. The Fifth Plan's programs and projects will, therefore, seek to develop appropriate solutions to these key issues.
General Education Issues

Low Internal Efficiency
The general expansion of education in the Fourth Plan period has also seen a continued upward trend in repetition and dropout rates, and a resulting decline in internal efficiency. When the effects of dropout and repetition are combined, an average of about 18 pupil-years must be invested to produce a male graduate of general education, and 15 pupil-years to produce a female graduate. This is not to say that the average graduate spends 18 (or 15) years in school; the actual average for those who complete secondary school is between 12 and 13 years. But the cumulative dropout losses, amplified by high repetition, represents 'waste' — that is, effort expended and resources consumed without achieving graduation.

As a result of such repetition and dropout therefore, there is unnecessarily prolonged use of school places. The Ministry of Education, in collaboration with educational research centers in the colleges and the education development center, is examining this problem thoroughly in an attempt to find an appropriate solution.

Preparation of Educational Leaders
Educational leaders are facing great challenges, and methods must be adopted to facilitate the provision of highly qualified leaders through scholarship and training programs in all fields of education.

High Growth in Female Secondary Level Graduates
The number of female secondary level graduates has increased more than tenfold, from 1,674 in 1395 to 18,211 in 1408, thus exceeding the number of male graduates, and according to the Fifth Plan projections, their number will reach 43,269 in 1415. However, this increase has not been accompanied by a commensurate increase in higher education opportunities for girls. Accordingly, post-secondary educational and training programs for girls should be created, which are in harmony both with the nature of Saudi females and with Islamic values.

Re-evaluation of Teaching Methods and Curriculum
Notwithstanding the changes introduced into the general education curriculum by the Educational Development Center, it is imperative to adopt modern teaching methods which emphasize understanding, derivation and problem solving.

Centralized Education Administration
The vast area of the Kingdom and the wide spatial distribution of schools throughout the regions require the adoption of a decentralized system of management and administration, in order to effect more appropriate and timely decision making.
School Buildings
Around 50 percent of general education schools operate in leased buildings. Of the 4,777 elementary schools for boys 2,564 operated in leased buildings, while 2,431 of the 3,275 elementary schools for girls are currently leased buildings. The number of secondary schools for boys and girls has reached 1,284, of which 436 are leased buildings. These leased buildings were not originally built for school use, and are considered unsuitable for educational purposes. This problem should be addressed according to a specific time schedule during the Fifth Plan period. In this respect, ways must be found to finance and implement a national program of schools construction, including, where possible, private sector participation.

Imbalances in Educational Services Distribution
An imbalance in the regional distribution of education services is now apparent. In order to address this issue, the Fifth Plan stresses the need to adopt a program of planning and mapping school sites. This initiative will combine centralized and decentralized planning practices, and will identify the regional distribution of schools by size, type of education and facilities to be provided, so that a fair and effective distribution of schools can be realized.

Pre-elementary Education (Kindergartens)
Several educational studies have proved the existence of a relationship between a student’s learning ability at the beginning of the elementary stage and his or her enrollment in kindergartens. In recognizing this fact, the Fifth Plan stresses the need to expand pre-elementary education programs.

Higher Education Issues

University Education Programs for Females
In the past, there has been rapid growth in the number of secondary level female graduates and this trend is expected to continue in the future also. On the other hand -- notwithstanding the substantial expansion realized by the General Presidency for Girl Colleges and the universities -- university programs for females are still in their preliminary stages and are not sufficiently developed, either qualitatively or quantitatively, to cope with this increased flow of secondary level graduates. Comprehensive planning for the development of Saudi human resources requires that this issue should receive immediate attention.

Low Internal Efficiency and External Effectiveness
The internal efficiency and external effectiveness of the higher education system are low, through high repetition and dropout rates within the system, and through some degree of mismatch between the skills acquired by graduates and those needed by the national economy.
Coordination Between Higher Education Institutions

Higher education institutions enjoy complete autonomy. As a result, there is a lack of coordination both within and between institutions, leading to great waste in human and material resources. This lack of coordination between institutions is considered to be one of the major issues facing the higher education system during the Fifth Plan period.

Master Plan for Higher Education

To achieve coordinated and balanced development of higher education over the long term, it is imperative to prepare a comprehensive policy framework (or ‘master plan’) for higher education. Such a master plan would help to avoid wastage and duplication, to realize the optimal utilization of available resources and to improve the quality of higher education.

Linkages Between Higher Education Institutions and the Private Sector

At present, the linkages between higher education institutions and the private sector are inadequate to serve the development needs of the economy. In addressing this issue, a number of new initiatives will be adopted during the Fifth Plan period:

- Private sector employers will be encouraged to provide higher education students with on-the-job practical training during their summer vacations.

- The universities will provide research and consultancy services to the private sector in the fields of industry, agriculture, trade and services.

- University programs in scientific fields will be evaluated on an ongoing basis in order to improve the academic and practical preparation of graduates in these fields.

- A coordination unit between the universities and the private sector will be created, whose main functions will be:
  - to identify and aim to meet the manpower needs of the private sector;
  - to conduct follow-up surveys of employed graduates with a view to evaluating how the links between employers’ needs and the educational curricula might be improved;
  - to regulate the process whereby the universities will supply consultancy services in various fields to private sector companies and government ministries.

Operational Efficiency

Although the Fourth Plan stressed the need to improve student/teacher ratios for overall operational efficiency, considerable variation in this ratio between higher education institu-
tions still exists. Furthermore, quality standards and average student costs also vary, within the SR 30,000 to SR 94,000 range.

**Post-graduate Studies and Scientific Research**

Studies and analysis prepared during the Fourth Plan period pointed to an imbalance in the distribution of post-graduate study programs among the universities. Some agencies have expanded horizontally in a manner that is inconsistent with their capabilities, while others have refrained from expansion even though they had acquired adequate facilities and capabilities. Thus, it is imperative to develop an accreditation system -- both internally within the Kingdom's higher education system, and externally in conjunction with internationally recognized institutions -- whereby these post-graduate programs can be evaluated and upgraded where necessary.

Furthermore, it is of great importance to place special emphasis on programs required by the development plans. Expenditure on scientific research represented only a small percentage of total expenditure on higher education during the Fourth Plan period, thus constraining the development of post-graduate study programs.

**Faculty Staff Members**

Disparity exists between higher education institutions regarding the principles of appointing and promoting faculty staff members. Precise criteria must be developed for evaluating the performance and quality of staff.

**Capacity of Higher Education Institutions**

A contentious issue in higher education has been whether or not university education should be provided to all secondary level graduates who apply for places. Such a policy would be inconsistent with the objectives of the Kingdom's Development Plans, which aim at expanding the effective contribution of Saudi nationals to economic and social development. Such contributions are not confined only to university graduates, as technical skills can be acquired outside the university setting. The need for such skills is expected to increase in the future, as the Kingdom moves beyond the stage of developing its infrastructure towards the expansion of its technology-based industry. It is a realistic assumption that four or five technicians will be needed for every university graduate. Moreover, the provision of university education to all secondary level graduates would lead to the following disadvantages:

- low quality university education;
- higher wastage as a result of students enrolling who lack the ability to complete their university education;
- the failure to meet the technical manpower needs of development.
12.1.3 Role of the Government and the Private Sector

While the government will continue to be the major provider of education to citizens, private education services have been steadily expanding and are expected to grow even further in new areas during the Fifth Plan. These new opportunities include:

- new school construction under lease-purchase arrangements;
- the provision of transportation services for students;
- maintenance services for vehicles owned by government agencies involved in the delivery of education services;
- the establishment of a specialized technological academy.

The increased participation of the private sector in the delivery of education services at all levels may result in raising the quality of education and increasing the efficiency and productivity of the education system as a whole.

12.1.4 Policies and Main Programs

The Fifth Plan’s general and higher education policies have been formulated in response to the issues described above and in light of the overall objectives of the education system. Some of these policies are:

A. General Education Policies

- To reduce the rates of dropout and grade repetition:
  - The current examination system will be reviewed and revised, as will the system of grade promotion to the next year, particularly for the first grade of secondary school.
  - Individual instruction will be encouraged to monitor student progress; emphasis will be placed on diagnostic assessment, providing guidance, counselling and remedial instruction rather than grade repetition.
  - Programs will be implemented to sensitize parents of children who are not achieving to their potential as to the importance of education and to provide them with the knowledge and skills they need to reinforce their children’s education.
- Additional alternative training opportunities will be made more widely available by establishing closer linkages between the education and training systems.

- To improve the quality of educational instruction:

  - Effective evaluation methods will be implemented to monitor the quality of education and the performance of students in terms of specific competencies related to the Kingdom’s development needs.

  - Improvements will be introduced into the curriculum and in teaching methods which encourage the development of problem solving skills and creativity.

  - Basic subjects relating to general principles of maintenance will be introduced into the curriculum at the intermediate and secondary school levels.

  - Basic military subjects will be introduced into the curriculum of secondary schools for boys.

  - Computer education will be introduced as an integral part of the curriculum at the intermediate level, and as an awareness program at the elementary level.

  - Emphasis will be given to improving the performance and professional commitment of teachers.

  - Teacher training will be upgraded in accordance with their responsibilities, while university graduates will be attracted into the early stages of education with adequate preparation.

  - Minimum standards will be established for facilities and the quality of educational services provided in schools throughout the Kingdom.

  - A study examining the feasibility of decentralizing the education system will be carried out.

  - Efforts to reduce regional imbalances in the quality of facilities will be enhanced.

  - Cost effectiveness in the delivery of education services will be improved by such measures as: increasing the teacher/pupil ratios, reducing the administrative staff/teacher ratios, and providing transportation to children living in under-populated areas, with the purpose of consolidating schools of small size.
- The private sector will be encouraged to play a greater role in the delivery of education services.

B. Higher Education Policies

- A comprehensive strategic policy framework and implementation plan for the coordinated development of the higher education system (the 'master plan') will be completed by the middle of the Fifth Plan period and will form an integral part of the mid Fifth Plan review.

- Post-secondary technical education will be expanded.

- To improve the quality and efficiency of the universities:
  - Admissions policy will be re-evaluated and specific criteria acceptable to all universities in the Kingdom will be developed.

  - Stipends and subsidies will be linked to student performance and progress. The current minimum standardized credit hours per semester needed to qualify for stipends, should be increased, so that students will be encouraged to finish their studies within the regular study period.

  - Linkages between higher education institutions and private sector employers will be strengthened -- to achieve improved coordination between producers and users of skills and to influence the attitudes and expectations of students.

- Universities will be encouraged to seek funding from private sources to establish ‘Centers of Excellence’ to conduct research and development in applied sciences and technology. These Centers will provide to the best and brightest Saudi professionals opportunities to develop into world-class professionals, and will strengthen linkages between the universities, the private sector and the government.

Main Programs

There are seven expenditure programs relating to the operations of institutions in the education sector in the Fifth Plan:

- Educational Process and Development
  This program provides education services to all levels of the system and it covers the education process and its development.
- **Management and Operation**
  This program includes administration services and the use of new technology in providing a cost effective administrative system.

- **Manpower Development**
  This program aims at the maximum utilization of manpower through training, Saudization and staff development.

- **Student Services/Extra-Curricular Activities**
  This program provides services to students and takes care of extracurricular and cultural activities.

- **Community Services**
  This program covers all the activities carried out by higher education institutions in the area of community service.

- **Operation and Maintenance**
  This program covers the expenditures on staff and materials necessary for the maintenance, cleaning and operation of all buildings in the higher education sector.

- **Construction**
  This program aims at constructing, equipping and expanding buildings and laboratories in order to meet the continuing increase in the number of male and female students.

12.1.5 Growth Targets in the Fifth Plan

The expected numbers of new students and graduates in general and higher education by education level, field of study and university, over the period 1409/10 to 1414/15, are shown in Tables 12.3, 12.4, 12.5, and 12.6.
Table 12.3

Fifth Plan Targets: General Education

<table>
<thead>
<tr>
<th>Student Category and Levels</th>
<th>1409/1410</th>
<th>1414/1415</th>
</tr>
</thead>
<tbody>
<tr>
<td>New Entrants: Male</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Elementary</td>
<td>153,830</td>
<td>215,957</td>
</tr>
<tr>
<td>Intermediate</td>
<td>79,079</td>
<td>117,813</td>
</tr>
<tr>
<td>Secondary</td>
<td>43,038</td>
<td>55,448</td>
</tr>
<tr>
<td>New Entrants: Female</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Elementary</td>
<td>130,745</td>
<td>169,079</td>
</tr>
<tr>
<td>Intermediate</td>
<td>62,424</td>
<td>98,834</td>
</tr>
<tr>
<td>Secondary</td>
<td>36,836</td>
<td>51,868</td>
</tr>
<tr>
<td>Graduates: Male</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Elementary</td>
<td>96,297</td>
<td>151,217</td>
</tr>
<tr>
<td>Intermediate</td>
<td>35,996</td>
<td>75,529</td>
</tr>
<tr>
<td>Secondary</td>
<td>29,090</td>
<td>38,015</td>
</tr>
<tr>
<td>Graduates: Female</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Elementary</td>
<td>75,852</td>
<td>117,694</td>
</tr>
<tr>
<td>Intermediate</td>
<td>43,145</td>
<td>67,347</td>
</tr>
<tr>
<td>Secondary</td>
<td>25,909</td>
<td>44,055</td>
</tr>
</tbody>
</table>

* Includes Saudi and Non-Saudi.
TABLE 12.4

Fifth Plan Targets: Higher Education
New Entrants by Field of Study
(Saudi Only)

<table>
<thead>
<tr>
<th>Field of Study</th>
<th>1409/1410</th>
<th></th>
<th></th>
<th>1414/1415</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
<td>Total</td>
<td>Male</td>
<td>Female</td>
<td>Total</td>
</tr>
<tr>
<td>------------------------------------</td>
<td>-------------</td>
<td>-----------</td>
<td>-----------</td>
<td>-------------</td>
<td>-----------</td>
<td>-----------</td>
</tr>
<tr>
<td>Arts and Linguistics</td>
<td>2,015</td>
<td>3,190</td>
<td>5,205</td>
<td>2,328</td>
<td>4,412</td>
<td>6,740</td>
</tr>
<tr>
<td>Education</td>
<td>1,984</td>
<td>3,160</td>
<td>5,144</td>
<td>2,111</td>
<td>5,206</td>
<td>7,317</td>
</tr>
<tr>
<td>Social &amp; Economic Studies</td>
<td>1,820</td>
<td>1,090</td>
<td>2,910</td>
<td>1,957</td>
<td>1,255</td>
<td>3,212</td>
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<tr>
<td>Natural Sciences</td>
<td>2,350</td>
<td>1,750</td>
<td>4,100</td>
<td>3,031</td>
<td>2,581</td>
<td>5,612</td>
</tr>
<tr>
<td>Engineering</td>
<td>2,060</td>
<td>—</td>
<td>2,060</td>
<td>2,514</td>
<td>—</td>
<td>2,514</td>
</tr>
<tr>
<td>Medicine and Medical Sciences</td>
<td>680</td>
<td>550</td>
<td>1,230</td>
<td>888</td>
<td>708</td>
<td>1,596</td>
</tr>
<tr>
<td>Allied Medical Sciences</td>
<td>250</td>
<td>250</td>
<td>500</td>
<td>318</td>
<td>318</td>
<td>636</td>
</tr>
<tr>
<td>Agriculture</td>
<td>390</td>
<td>200</td>
<td>590</td>
<td>530</td>
<td>278</td>
<td>808</td>
</tr>
<tr>
<td>Veterinary Medicine</td>
<td>84</td>
<td>—</td>
<td>84</td>
<td>128</td>
<td>—</td>
<td>128</td>
</tr>
<tr>
<td>Computer Science and Information</td>
<td>418</td>
<td>50</td>
<td>468</td>
<td>481</td>
<td>70</td>
<td>551</td>
</tr>
<tr>
<td>Islamic Studies</td>
<td>1,868</td>
<td>570</td>
<td>2,438</td>
<td>2,492</td>
<td>855</td>
<td>3,347</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>13,919</strong></td>
<td><strong>10,810</strong></td>
<td><strong>24,729</strong></td>
<td><strong>16,778</strong></td>
<td><strong>15,683</strong></td>
<td><strong>32,461</strong></td>
</tr>
</tbody>
</table>
TABLE 12.5
Fifth Plan Targets: Higher Education
Graduates by Field of Study
(Saudi Only)

<table>
<thead>
<tr>
<th>Field of Study</th>
<th>1409/1410</th>
<th></th>
<th></th>
<th>1414/1415</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
<td>Total</td>
<td>Male</td>
<td>Female</td>
<td>Total</td>
</tr>
<tr>
<td>Arts and Linguistics</td>
<td>1,235</td>
<td>2,167</td>
<td>3,402</td>
<td>1,517</td>
<td>2,810</td>
<td>4,327</td>
</tr>
<tr>
<td>Education</td>
<td>1,224</td>
<td>2,392</td>
<td>3,616</td>
<td>1,648</td>
<td>3,389</td>
<td>5,037</td>
</tr>
<tr>
<td>Social &amp; Economic Studies</td>
<td>1,092</td>
<td>521</td>
<td>1,613</td>
<td>1,350</td>
<td>927</td>
<td>2,277</td>
</tr>
<tr>
<td>Natural Sciences</td>
<td>434</td>
<td>1,000</td>
<td>1,434</td>
<td>1,411</td>
<td>1,633</td>
<td>3,044</td>
</tr>
<tr>
<td>Engineering</td>
<td>459</td>
<td>—</td>
<td>459</td>
<td>1,434</td>
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<td>1,434</td>
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<tr>
<td>Medicine and Medical Sciences</td>
<td>173</td>
<td>153</td>
<td>326</td>
<td>423</td>
<td>338</td>
<td>761</td>
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<tr>
<td>Allied Medical Sciences</td>
<td>32</td>
<td>17</td>
<td>49</td>
<td>167</td>
<td>159</td>
<td>326</td>
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<tr>
<td>Agriculture</td>
<td>265</td>
<td>106</td>
<td>371</td>
<td>319</td>
<td>173</td>
<td>492</td>
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<tr>
<td>Veterinary Medicine</td>
<td>12</td>
<td>—</td>
<td>12</td>
<td>54</td>
<td>—</td>
<td>54</td>
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<tr>
<td>Computer Science and Information</td>
<td>134</td>
<td>—</td>
<td>134</td>
<td>285</td>
<td>40</td>
<td>325</td>
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<td>Islamic Studies</td>
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<td>225</td>
<td>1,403</td>
<td>1,528</td>
<td>535</td>
<td>2,063</td>
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<td><strong>Total</strong></td>
<td><strong>6,238</strong></td>
<td><strong>6,581</strong></td>
<td><strong>12,819</strong></td>
<td><strong>10,136</strong></td>
<td><strong>10,004</strong></td>
<td><strong>20,140</strong></td>
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</table>
TABLE 12.6
Fifth Plan Targets: Higher Education New Entrants and Graduates by Institution*

<table>
<thead>
<tr>
<th>Student Category and Institution</th>
<th>1409/1410</th>
<th></th>
<th></th>
<th>1414/1415</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
<td>Total</td>
<td>Male</td>
<td>Female</td>
<td>Total</td>
</tr>
<tr>
<td>NEW ENTRANTS</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>KSU</td>
<td>5,033</td>
<td>2,644</td>
<td>7,677</td>
<td>5,761</td>
<td>3,077</td>
<td>8,838</td>
</tr>
<tr>
<td>KAAU</td>
<td>4,189</td>
<td>2,566</td>
<td>6,755</td>
<td>4,789</td>
<td>2,768</td>
<td>7,557</td>
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<tr>
<td>KFU</td>
<td>668</td>
<td>467</td>
<td>1,135</td>
<td>959</td>
<td>694</td>
<td>1,653</td>
</tr>
<tr>
<td>KFUPM</td>
<td>1,487</td>
<td>—</td>
<td>1,487</td>
<td>1,628</td>
<td>—</td>
<td>1,628</td>
</tr>
<tr>
<td>Islamic Univ.</td>
<td>750</td>
<td>—</td>
<td>750</td>
<td>1,000</td>
<td>—</td>
<td>1,000</td>
</tr>
<tr>
<td>Imam Univ.</td>
<td>2,607</td>
<td>495</td>
<td>3,102</td>
<td>3,487</td>
<td>792</td>
<td>4,279</td>
</tr>
<tr>
<td>Umm Al-Qura</td>
<td>1,320</td>
<td>1,100</td>
<td>2,420</td>
<td>1,909</td>
<td>1,617</td>
<td>3,526</td>
</tr>
<tr>
<td>Girls Colleges</td>
<td>—</td>
<td>4,260</td>
<td>4,260</td>
<td>—</td>
<td>8,463</td>
<td>8,463</td>
</tr>
<tr>
<td>TOTAL</td>
<td>16,054</td>
<td>11,532</td>
<td>27,586</td>
<td>19,533</td>
<td>17,411</td>
<td>36,944</td>
</tr>
<tr>
<td>GRADUATES</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>KSU</td>
<td>2,314</td>
<td>1,293</td>
<td>3,607</td>
<td>3,580</td>
<td>2,103</td>
<td>5,683</td>
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<td>KAAU</td>
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<td>1,419</td>
<td>2,902</td>
<td>2,893</td>
<td>2,099</td>
<td>4,992</td>
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<tr>
<td>KFU</td>
<td>282</td>
<td>330</td>
<td>612</td>
<td>500</td>
<td>419</td>
<td>919</td>
</tr>
<tr>
<td>KFUPM</td>
<td>501</td>
<td>—</td>
<td>501</td>
<td>1,015</td>
<td>—</td>
<td>1,015</td>
</tr>
<tr>
<td>Islamic Univ.</td>
<td>500</td>
<td>—</td>
<td>500</td>
<td>970</td>
<td>—</td>
<td>970</td>
</tr>
<tr>
<td>Imam Univ.</td>
<td>1,678</td>
<td>83</td>
<td>1,761</td>
<td>2,057</td>
<td>462</td>
<td>2,519</td>
</tr>
<tr>
<td>Umm Al-Qura</td>
<td>567</td>
<td>820</td>
<td>1,387</td>
<td>1,023</td>
<td>1,007</td>
<td>2,030</td>
</tr>
<tr>
<td>Girls Colleges</td>
<td>—</td>
<td>3,023</td>
<td>3,023</td>
<td>—</td>
<td>5,011</td>
<td>5,011</td>
</tr>
<tr>
<td>TOTAL</td>
<td>7,325</td>
<td>6,968</td>
<td>14,293</td>
<td>12,038</td>
<td>11,101</td>
<td>23,139</td>
</tr>
</tbody>
</table>

* Includes Saudi and Non-Saudi.

12.1.6 Fifth Plan Financial Allocations: Education

The financial allocations for the general and higher education systems during the Fifth Plan are shown in Table 12.7.
12.2 VOCATIONAL AND TECHNICAL EDUCATION AND TRAINING

12.2.1 Role and Development Objectives

The primary role of vocational and technical education and training (the training sector) is to facilitate the acquisition of practical skills, attitudes, understanding and knowledge by Saudi technical manpower for a wide range of occupations and specific tasks needed for the development of the Saudi economy. In this regard, the training sector constitutes an integral and important element of the human resource development strategy of the Kingdom.

In the Kingdom, vocational and technical education and training is provided by a number of public and private sector institutions. In the public sector, the two main agencies providing a broad range of programs are: the Institute of Public Administration (IPA) and the General Organization for Technical Education and Vocational Training (GOTEVT). The IPA provides mainly short-term in-service training for civil service employees, in addition to its research and consultancy services to improve public administration practices. General occupational preparation is provided by GOTEVT through 3-year vocational/technical education programs at the secondary school level and 2-year technical education programs at the post-secondary school level. Specific job/task related preparation, orientation and upgrading are done through short-term (up to 18 months) pre-service and in-service on-the-job and/or off-the-job training programs at vocational training centers all over the country. A large number of Ministries and government development agencies and public economic corporations operate in-house vocational and technical education institutes and/or training centers to meet their own specialized training needs. Some universities also offer specialized courses and seminars for professionals at the request of public or private sector clients. Figure 12.2 shows the Kingdomwide distribution of technical education and vocational training facilities.
In the private sector, a number of small companies provide specialized training programs, predominantly in business and computer related fields. Some large business establishments operate and maintain training centers to train their own employees.

**General Objectives of the Training Sector**

The development objectives of the training sector during the Fifth Plan period are as follows:

1. To increase the horizontal and vertical coverage of vocational and technical education and training programs with due emphasis on on-the-job training in both public and private sectors, in order to meet the requirements for qualified national manpower;

2. To place greater emphasis on the quality of vocational and technical education and training, with particular emphasis on modern technology at all levels in order to meet the national economy’s requirements;

3. To maintain coordination and cooperation between vocational and technical education and training institutions, and other competent agencies, with a view to achieving manpower development objectives;

4. To improve the internal efficiency and external effectiveness of the training system by increasing the quantity of output and raising its quality, and by upgrading the system’s operating efficiency through the development of its administrative and technical functions.

**12.2.2 Achievements and Key Issues**

The last two decades have witnessed a rapid expansion in the training sector’s infrastructural facilities and enrollments at all levels, along with sweeping organizational changes:

- Training is provided by the government free of charge, while students are also provided allowances, and room and board if needed.

- The total number of students and trainees undergoing secondary and post-secondary vocational and technical education, and short-term pre-service and in-service training programs, has increased more than tenfold from around 6,000 to over 70,000.

- During the Fourth Plan period, the growth in enrollment at all levels exceeded the Plan targets. The proportion of students entering vocational and technical educa-
tion programs at the secondary level increased from 13 percent to 18 percent, and at the post-secondary level, from 3 percent to 8 percent. The total number of trainees entering short-term training programs at GOTEVT and the IPA increased to over 20,000 from around 15,000 at the beginning of the Fourth Plan.

- Private sector involvement in training is a relatively recent development and the scope of training programs offered is still limited. The total number of persons completing these training programs during the Fourth Plan period is estimated to be around 15,000.

**Key Issues**

A characteristic feature of the Kingdom's development history has been the significant quantitative growth and progressive quality improvement of educational and training variables, as evidenced by both the input and output levels of the educational and training system. It is, therefore, only natural that certain negative aspects should ensue as key issues to be addressed in the policies, programs, and projects of the Fifth Plan, and for which adequate solutions should be sought. These key issues are:

1. **External Effectiveness of Training Institutions**

   There is evidence to suggest that the external effectiveness of training institutions is weak in terms of their output matching the market's need for high quality trained labor. This requires greater emphasis on guidance and orientation programs, intensive activities in various areas, and increased effectiveness of technical and administrative training programs, both within and outside the Kingdom.

2. **Low Operating Efficiency**

   The student/teacher ratio and trainee/instructor ratio is low and varies considerably among vocational and technical education and training institutions. Upgrading of operating efficiency will require that the ratio be raised. In this respect, student/teacher ratios of 10:1 in technical practical education, 15:1 in technical theoretical education, and 6:1 in vocational training have been targeted in the Fifth Plan. In general, the vocational and technical education and training system lacks the optimal utilization of existing capacity.

3. **Coordination**

   Coordination among vocational and technical education and training institutions is important for identifying the role and tasks of individual institutions in accomplishing manpower development objectives. Coordination acquires an added significance in establishing a uniform admissions policy which would restrict the transfer
of students/trainees from one institution to another prior to completion of the academic year, which under current practice, leads to a high dropout rate.

4. Identification of Training Needs

Statistical surveys of labor market requirements for various specializations are an important method for identifying training requirements and planning technical education and training output. The absence of such information poses a constraint on planning for the development of national manpower. An important focus of the Fifth Plan is to stress the importance of such information and statistics in the definition of planning targets for some training agencies.

5. Master Plan for Training

Efforts have so far fallen short of preparing a master plan which would encompass all areas of training, with the aim of establishing a balanced approach to the long term development and preparation of manpower, the study of actual and variable levels of manpower supply and demand, the distribution of tasks (including policy preparation, coordination and implementation) among all vocational and technical education and training institutions at national and regional levels.

The lack of a master plan significantly affects manpower training, due to the absence of information on manpower needs and the actual supply of various skills. The Fifth Development Plan for GOTEVT and the IPA has, therefore, highlighted these requirements through agency targets to be reached during the plan period.

6. Provision of Educational Leaders and Upgrading their Efficiency

Educational and training leaders are faced with major challenges, in terms of increasing the number of graduates of training programs and raising the quality of training programs at least cost. Appropriate measures should be taken to ensure an adequate supply of highly qualified and capable leaders through scholarships and training in all technical and educational fields.

12.2.3 Role of the Government and the Private Sector

The government has always been both the major producer and user of vocational and technical education and training services. The private sector, with the exception of a few large companies, has neither used the training services provided by the government, nor made any significant investment in developing its own training activities.
The Fifth Plan period will bring a new outlook to the sector. The government will continue to provide basic training services, through the following measures:

- continued financing of vocational and technical education and training;
- continued construction of educational and training facilities;
- emphasis on the importance of national manpower development;
- provision of financial and other assistance which contribute to manpower development.

In the meantime, more active contributions will be made by the private sector during the Fifth Plan in the provision of training resources, through:

- contributions in setting up some vocational training centers, institutes, schools and technical colleges under long term lease agreements;
- contributions to technical manpower preparation by creating specialized technical institutes;
- the formation of national technical committees which would contribute to the development of vocational and technical education and training.

The expansion of private sector training activities will be actively encouraged and supported by the government.

12.2.4 Training Policies and Main Programs

The major policy thrust of the Fifth Plan will be to further develop the vocational and technical education and training system with a philosophy and operational structure that is responsive to the changing labor market environment and that meets the skilled manpower needs of the Saudi economy effectively and efficiently. Towards this goal the following policy measures will be implemented:

1. **Increase the coverage of the vocational and technical education and training services**: A high priority will be given to post-secondary technical education, short-term (up-to-6 months) pre-service training programs for out-of-school youth and unskilled adults, in-service training of Saudis employed by the private sector.
2. **Re-orient the training system towards labor market requirements**: Advisory committees, consisting of representatives of employers and training institutions, will be established at the national, regional and local levels. Selected administrative functions will be decentralized to make the system more responsive to local needs. The curriculum will be periodically reviewed and revised to keep abreast of technological developments and to inculcate in trainees a sense of responsibility and entrepreneurial skills. Occupational standards in priority areas will be developed. Graduate placement and follow-up services will also be established. The nature and scope of financial incentives provided to students and trainees will be reviewed.

3. **Improve the policy making and coordinated implementation mechanism of the training system**: A comprehensive policy framework and implementation plan will be developed within a 'Master Plan' in coordination with the Ministry of Planning and in collaboration with the Manpower Council, the private sector and other relevant agencies. The 'Master Plan' will cover the training activities of all agencies involved in the delivery of training services in the public sector and define the training role and activities of the private sector. GOTEVT will assume a major role in this regard by adopting the appropriate measures to coordinate the activities of all public and private sector training agencies.

4. **Develop a centralized support system**: Improved centralized professional support services will be provided to public and private agencies under the coordination of GOTEVT. These will include: certification system for technical manpower; research, development and consultation services in planning, implementation and evaluation of training activities; occupational counselling services; information and publication activities; and new educational technologies.

5. **Improve the professional competence of training personnel**: The preparation of training specialists at graduate level will be coordinated with the universities, and intensive in-service development programs will be conducted. More scholarships and field trip opportunities will also be provided.

6. **Increase the participation of the private sector in the financing and delivery of training services**: The option of buying training services from private and joint public/private companies, as opposed to building additional facilities in the public sector, will be encouraged.

7. **Coordinate admission policies among vocational and technical education and training institutions**: Admissions standards and procedures for GOTEVT and other government agency training units shall be regulated through the office of admission and
registration coordination proposed for GOTEVT. Procedures for the transfer of students between programs and institutions will be developed.

8. **Increase the utilization of existing training resources**, by consolidating small size operations, introducing a year-round education cycle and second teaching shifts, and assigning training responsibilities to experts and skilled workers in the occupational preparation of Saudis. Specialized training services of the agencies with demonstrated excellence will be further utilized in meeting the training requirements of other institutions.

9. **Saudiization in the private sector through training**: A study will be conducted to determine the feasibility of implementing a vocational apprenticeship system through utilizing the training capacity of non-Saudi manpower, with the aim of Saudiizing private sector jobs. Customized pre-service training programs will also be prepared, to encourage acquisition by Saudi nationals of new experiences and skills through cooperative education and summer-time training.

**Main Programs**

There are six main programs for the training sector in the Fifth Plan, which specify the essential activities required to operate training institutions. The programs are:

1. **Education and Training**

   This program represents the primary function of GOTEVT and encompasses all the activities of its education and training units.

2. **Research and Development**

   The program covers all research, development and planning activities, including the collection, processing and publication of data relevant to the main functions of GOTEVT. Activities under this program include the creation of a data base, the preparation of studies that measure the internal efficiency of the vocational and technical education and training system, as well as the internal efficiency of GOTEVT administration staff. The program also includes the planning for and identification of qualitative and quantitative requirements of vocational and technical education and training, development of programs and curricula, follow-up on graduates, and translation and publication of specialized books about GOTEVT activities.
3. **Administrative Development**

   This program represents the primary function of the IPA. It aims at improving the administrative functioning and organization of government agencies through training, consultation, administrative reform, public relations, etc.

4. **Management and Operation**

   This program is aimed at developing and upgrading administrative and managerial organization, through the creation of new units, and raising the efficiency of existing organizational units. Administration, finance and public relations functions are also covered by this program.

5. **Manpower Development**

   This program seeks to develop and improve manpower efficiency, through training courses, seminars, academic studies under scholarship arrangements, participation in local and international scientific meetings, and adoption of an effective short- and long-term Saudiization system.

6. **Operation and Maintenance**

   The program covers maintenance and janitorial services of main and branch buildings, in addition to maintenance of systems and equipment.

7. **Construction**

   This program aims at the completion of construction projects in progress, the construction of new facilities and upgrading of existing facilities.

12.2.5 **Growth Targets in The Fifth Plan**

   Growth targets for enrollments, graduates and total admissions of GOTEVT and the IPA are summarized in Table 12.8. Growth targets for admissions and enrollments in training at other government agencies, as well as training in the private sector, are shown in Table 12.9.
TABLE 12.8

Fifth Plan Training Targets: GOTEVT and the IPA

<table>
<thead>
<tr>
<th></th>
<th>1409/1410</th>
<th></th>
<th>1414/1415</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>New</td>
<td>Graduates</td>
<td>New</td>
<td>Graduates</td>
</tr>
<tr>
<td></td>
<td>Entrants</td>
<td></td>
<td>Entrants</td>
<td></td>
</tr>
<tr>
<td>GOTEVT</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Technical Colleges</td>
<td>899</td>
<td>415</td>
<td>3,260</td>
<td>2,068</td>
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<tr>
<td>Higher Institutes of Commerce</td>
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<td>644</td>
<td>515</td>
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<td>Industrial Secondary Schools</td>
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<td>Commercial Secondary Schools</td>
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<td>5,493</td>
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<td>Agricultural Secondary Schools</td>
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<td>134</td>
<td>253</td>
<td>144</td>
</tr>
<tr>
<td>Institutes of Technical Supervisors</td>
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<td>248</td>
<td>700</td>
<td>422</td>
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<td>Vocational Training</td>
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<td>6,932</td>
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</tr>
<tr>
<td>Instructor Training</td>
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<td>75</td>
<td>100</td>
<td>90</td>
</tr>
<tr>
<td>On-the-Job Training</td>
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<td>280</td>
<td>280</td>
<td>280</td>
</tr>
<tr>
<td>IPA</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre-service training</td>
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<td>3,000</td>
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<td>Special programs</td>
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<td>653</td>
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<td>English Language</td>
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<td>1414/1415 New Entrants</td>
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</tr>
<tr>
<td>--------------------------------</td>
<td>------------------------</td>
<td>------------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ministry of Health</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>- Health Training Institutes (Male)</td>
<td>1,400</td>
<td>1,500</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Health Training Institutes (Female)</td>
<td>500</td>
<td>600</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MOPTT</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>- Telecommunication Institute</td>
<td>200</td>
<td>300</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Postal Secondary Institute</td>
<td>184</td>
<td>200</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ministry of Defence and</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Civil Aviation (Presidency of Civil Aviation)</td>
<td>400</td>
<td>500</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Civil Aviation Institutes and Centers</td>
<td>400</td>
<td>500</td>
<td></td>
<td></td>
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<tr>
<td>Others*</td>
<td>12,000</td>
<td>41,900</td>
<td></td>
<td></td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Others</th>
<th>Enrollment</th>
<th>Enrollment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Training in Public Sector</td>
<td>20,000</td>
<td>22,000</td>
</tr>
<tr>
<td>Training in Private Sector</td>
<td>7,000</td>
<td>35,700</td>
</tr>
</tbody>
</table>

* Includes Agricultural Center, Banking Institute, SAUDIA, SGRRO, Training Center for Saudi Ports Authority.
12.2.6 Financial Allocations: Training Sector

The financial allocations for the main government agencies in the training sector during the Fifth Plan are shown in Table 12.10 below.

<table>
<thead>
<tr>
<th>Agency</th>
<th>Salaries and Supplies</th>
<th>Operation and Maintenance</th>
<th>Projects</th>
<th>Total</th>
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<tr>
<td>GOTEVT</td>
<td>3,935</td>
<td>410</td>
<td>1,655</td>
<td>6,000</td>
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<tr>
<td>IPA</td>
<td>828</td>
<td>12</td>
<td>175</td>
<td>1,015</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>4,763</strong></td>
<td><strong>422</strong></td>
<td><strong>1,830</strong></td>
<td><strong>7,015</strong></td>
</tr>
</tbody>
</table>

12.3 EMPLOYMENT REGULATION AND SERVICES

12.3.1 Role and Development Objectives

Ensuring the effective utilization of Saudi nationals in all sectors of the economy and reducing reliance on non-Saudi manpower will continue to be major objectives of manpower policy in the Kingdom. These objectives can be achieved by enacting laws which define the rights and obligations of workers and employers, by providing appropriate labor market services, and by implementing policies for enhancing the efficient functioning of the labor market. The basic rights and obligations of workers and employers in the private sector are defined in the Labor and Workmen Law, which comprehensively covers all legal aspects of employment, working conditions, employer-employee relations, and rules and regulations governing the employment of non-Saudi workers. For public sector employees, these aspects are covered under the Civil Service regulations and by-laws.

Three government agencies are responsible for developing labor market policies, regulating employment of Saudi and non-Saudi workers in the public and private sectors, and for providing services to match workers with available jobs. The Ministry of Labor and Social Affairs, is responsible for enforcing the provisions of the Labor and Workmen Law, providing employment placement and counselling services to Saudi nationals looking for work, developing and
disseminating labor market information and regulating the employment of non-Saudi workers in the private sector. The Civil Service Bureau, is responsible for recruitment and regulating employment in the civilian public sector, while the Manpower Council is responsible for developing labor market policies, and coordinating the manpower-related activities of all government agencies.

The main objectives for the above agencies in the Fifth Plan period are:

1. To promote the employment of Saudis, both men and women, in all sectors of the economy;

2. To improve the matching between Saudi workers and available jobs, by ensuring the availability of appropriate labor market services and information to individuals, employers, and students making career choices.

12.3.2 Achievements and Key Issues

In response to changing labor market conditions, several amendments to the articles and provisions of both the Labor and Workmen Law and the Civil Service regulation have been made over the last decade. To increase the employment of Saudi nationals in the private sector, the Ministry of Labor and Social Affairs has continued to provide employment placement services to Saudi nationals looking for work in the private sector, and to assist employers in finding suitable workers. It has also significantly improved its monitoring of private sector employment conditions, as the number of inspection visits made to private sector establishments exceeded the Fourth Plan targets. During the first year of the Fourth Plan, the responsibility for regulating the employment of non-Saudis in the private sector was transferred to the Ministry of Labor and Social Affairs. During the course of the Fourth Plan, the Deputy Ministry of Labor Affairs has strengthened the administrative mechanisms regulating the employment of non-Saudis in the private sector.

The Civil Service Bureau has expanded its network of regional offices providing employment placement services to Saudi nationals. During the first four years of the Fourth Plan, the Civil Service Bureau placed into employment over 30,000 Saudi university graduates (male and female) in the various government agencies -- representing 65 percent of total Saudi university graduates and 91 percent of graduates who sought jobs in the government sector.

The Manpower Council has carried out a number of research studies on various aspects of manpower development and utilization. It has also approved several measures to tackle key issues in education, training, women’s work, and the replacement of non-Saudi workers with Saudi nationals.
Key Issues

During the Fifth Plan period, almost 96 percent of employment growth is expected to be in the private sector. Although total employment is projected to increase by 213,500, the Saudi national labor force is expected to increase by 433,900. Consequently, two increasingly important issues in the Fifth Plan will be the replacement of non-Saudi employees with Saudis in both government and private sectors, and the successful placement of these Saudi new entrants into private sector employment. In this regard, more systematic planning by the Civil Service Bureau will be necessary in order to effect the orderly replacement of non-Saudi employees with Saudis. It will also need to examine more closely the opportunities and constraints in the way of increasing the participation of Saudi women in the public sector. To ensure the successful absorption of Saudi new entrants in the private sector, the Ministry of Labor and Social Affairs will have to enforce more rigorously the provisions of the Labor and Workmen Law.

The existing labor offices of the Ministry of Labor and Social Affairs continue to provide useful services. However, as the labor market becomes more complex, an improvement and expansion of services will be needed to match more efficiently those Saudi workers looking for work with available jobs.

Timely and reliable information and analysis has an important role in enhancing labor market efficiency and in planning for human resources development. Although some progress has been made, the lack of up to date, comprehensive and reliable data remains a major obstacle to understanding the dynamics of the labor market and to designing programs for ensuring the optimal utilization of available Saudi manpower. During the Fifth Plan period, the development and dissemination of labor market information and analysis will be accorded a high priority.

The importance of both pre-service and in-service employment related training for increasing the employment of Saudis in the private sector cannot be over emphasized. High priority will be given to the expansion and improvement of this type of training.

12.3.3 Role of the Government and the Private Sector

The primary role of the government is to create an environment which facilitates labor market efficiency, through the implementation of appropriate policies and the provision of necessary labor market services. The government is also responsible for ensuring that both employers and workers abide by the rules and regulations governing employment and working conditions in the public and private sectors, and for actively promoting the employment of Saudi nationals in the labor market. The realization of national development objectives requires that this developmental role cannot be left to market forces alone, and that the government must intervene
in the labor market through the implementation of appropriate employment regulations and
the provision of employment related services.

While the government has the primary responsibility for ensuring the availability of neces-
sary labor market services, it should not be viewed as the sole provider of all services needed.
In the case of some services, such as employment placement and job counselling, private en-
trepreneurs and other quasi-government agencies can play a useful role in matching Saudis looking
for work with available jobs. In other areas, such as the development and dissemination of
labor market information and analysis on current and expected labor market conditions, the
government will continue to play the major role.

12.3.4 Sectoral Policies and Main Programs

During the Fifth Plan period, the development and implementation of labor market policies
as well as the nature, scope, and quality of labor market services will be improved and signifi-
cantly expanded to ensure optimal utilization of the available Saudi national manpower in both
the public and private sectors. The policies and programs of the agencies involved in promot-
ing employment of Saudi nationals, regulating employment of non-Saudi workers, and provid-
ing employment related services will follow three main directions:

Saudiization
The Civil Service Bureau, which is responsible for employment in the public sector, will:

- Undertake a comprehensive review of the utilization of Saudi and non-Saudi man-
  power in each public sector agency to establish manpower levels needed, in each class-
  ification, to deliver the programs and services of the agency efficiently;

- Prepare an annual Saudiization Plan in consultation with each ministry and agency; the
  Saudiization Plans will identify specific positions targeted for replacement, Saudi em-
  ployees selected to replace non-Saudis, training requirements for Saudi employees,
  and the time schedule and resources needed to implement the Plans;

- Identify new employment opportunities for Saudi women, in conjunction with rele-
  vant ministries.

The Ministry of Labor and Social Affairs, which is responsible for the employment of
Saudi and non-Saudi workers in the private sector, will:

- Undertake a review of the Labor and Workmen Law to ensure that its provisions are
  appropriate to current labor market conditions and actively promote the employment
  of Saudi nationals in the private sector;
• Prepare and implement a plan that establishes realistic targets for enforcing the provisions of the Labor and Workmen Law, and gradually increasing the participation of Saudi nationals in the private sector.

**Labor Market Services**
The Civil Service Bureau will:

• Develop a comprehensive data base on jobs available in both public and private sectors in cooperation with the Ministry of Labor and Social Affairs;

• Streamline its classification system and remuneration structure in order to maintain appropriate parity with the private sector.

The Ministry of Labor and Social Affairs will:

• Improve and expand its labor market services to match Saudi workers with available jobs, by:

  - expanding employment placement and job counselling services to Saudis looking for work in the private sector;

  - linking labor offices through a computerized system that provides information on job vacancies, employment, and working conditions in the private sector;

  - issuing licenses to private sector agencies and individuals to establish companies that provide employment placement and job counselling services, and regulating and monitoring the activities of these companies.

• Collect and regularly disseminate to all labor market participants, information on job vacancies and average wages by occupation, the number of Saudis seeking work by occupation, and the employment outlook for the next two to five years.

In addition to its other activities, the Manpower Council will:

• Develop and widely disseminate information on occupations open to women in both the public and private sectors and the number of job vacancies available in each occupation, on a regular basis.
Training of Saudi Manpower
The Civil Service Bureau will:

- Place special emphasis on training and upgrading the skills of Saudi employees to increase their career advancement opportunities and to improve public sector efficiency.

The Ministry of Labor and Social Affairs will:

- Develop a plan to increase employment based pre-service and in-service training programs for Saudi workers in the private sector, in conjunction with GOTEVT and the Chambers of Commerce and Industry;

- Introduce provisions in the Labor and Workmen Law obliging employees who receive training at the employer’s cost to remain with that employer for a specified minimum period.

12.3.5 Growth Targets for the Fifth Plan

During the Fifth Plan period, the Ministry of Labor and Social Affairs will open nine new labor offices to expand the coverage of its employment related services to remote areas. It will also establish three additional ‘Primary Commissions’ responsible for settling disputes between workers and employers in the private sector. To improve the effectiveness and efficiency of its services, it will train 70 labor inspectors, and develop -- in conjunction with the IPA -- new training programs for Employment Placement and Job Counselling Specialists. As part of its labor inspection responsibilities, the Ministry will ensure that every private sector establishment with 20 or more employees is visited at least once every year.

To increase the Saudization of the work force in the government sector, the Civil Service Bureau will prepare and submit to the Manpower Council detailed Saudization targets for each government agency, two months prior to the preparation of the annual budget. To improve the efficiency of the public service, the Civil Service Bureau will prepare an annual training plan. It will also actively support both on-the-job and formal training programs to upgrade the skills of between 5,000 and 7,000 Saudi non-cadre employees during the Fifth Plan period.
12.3.6 Financial Allocations: Employment Regulation and Services

The financial allocations for the Employment Regulation and Services sector during the Fifth Plan are shown in Table 12.11.

**TABLE 12.11**

<table>
<thead>
<tr>
<th>Agency</th>
<th>Salaries and Supplies</th>
<th>Operations and Maintenance</th>
<th>Projects</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Civil Service Bureau</td>
<td>369.9</td>
<td>6.5</td>
<td>16.6</td>
<td>393.0</td>
</tr>
<tr>
<td>Deputy Ministry of Labor Affairs</td>
<td>534.9</td>
<td>13.5</td>
<td>17.8</td>
<td>566.2</td>
</tr>
<tr>
<td>Secretariat of the Manpower Council</td>
<td>30.0</td>
<td>0.0</td>
<td>0.0</td>
<td>30.0</td>
</tr>
<tr>
<td>Total</td>
<td>934.8</td>
<td>20.0</td>
<td>34.4</td>
<td>989.2</td>
</tr>
</tbody>
</table>

12.4 SCIENCE AND TECHNOLOGY

12.4.1 Role and Development Objectives

During the past two decades the vigorous introduction and application of advanced technology in various sectors of the economy has brought about unprecedented success to the development process in Saudi Arabia. The government has promoted all efforts to apply advanced technology to the removal of inherited resource constraints and the maximum exploitation of national endowments. The successful application of desalination technology to alleviate water shortages is a typical example of the former case, while the development of the petrochemical industry is a good example of the latter.

The Fifth Plan strategy emphasizes the importance of stable growth and diversification of the economy. In this regard science and technology contributes not only to economic growth, but also to the change in economic structure. The application of advanced technology leads to higher productivity, which is a key factor for economic strength in a highly competitive world. As the level of technology in use rises, so too does society’s dependence on technology. Similarly, as socioeconomic development proceeds in more complex directions, the need for more sophisticated technology increases. Technology promotes harmonization between social and economic development on the one hand, and the preservation of traditional social and cultural values and the morals of Islam, on the other.
The Fifth Plan will continue to emphasise the major long term development objectives for science and technology, which are:

- To contribute to raising the quality of locally produced goods and services, thereby improving living standards and the quality of life;

- To stimulate the use of advanced technology in all economic sectors, with special emphasis on the use of capital-intensive processes in industry and agriculture;

- To promote expansion in the national scientific research and technology base, and contribute towards the development of national scientific and technical manpower;

- To invest in research in those technologies where the Kingdom has natural economic advantages (such as solar energy projects) or resource constraints (such as the use of saline water in agriculture).

12.4.2 Achievements and Key Issues

The Kingdom’s experience in the use of technology is now well established. The major cities of the Kingdom are supplied with potable water from desalination plans which are amongst the biggest in the world. Most of the population is now supplied with electricity and the Kingdom’s cities and villages are now extensively linked through road and air transportation networks. In response to the increasing demand for rapidly developing high technology services, a telecommunications network has been installed for the transmission of written data (telex and computer) based on PSPDN (Package Switched Public Data Network). These achievements have resulted in the establishment of a sophisticated infrastructure that is similar to those existing in the industrial countries.

The transfer and application of advanced technology (including irrigation technology) has led to the rapid growth of agriculture, while the establishment of high technology petrochemical and oil refining industries has made a fundamental contribution to the desired structural change in the economy. The extensive use of advanced data processing in government offices has led to improved public services. Needed skills have been acquired in selecting suitable leading technologies for large civilian and defense projects, and in undertaking important maintenance activities. Advanced laser technology is now widely used in medical fields. The introduction of the computer as an auxiliary tool in the educational process is widespread, while individual consumers now enjoy the benefits of high quality, high performance products and services utilizing
the latest technology. In general, therefore, people’s contact with science and technology has become very direct.

In 1406, the name of SANCST was changed to ‘King Abdulaziz City for Science and Technology (KACST)’ to reflect its numerous responsibilities. KACST has strongly supported research and development (R&D) projects at universities and other research institutions through ‘annual award grants’ and ‘national research project grants’. Basic services for the promotion of R&D have been provided through the enactment of the Patent Law, the preparation of a legal framework for technology transfer, and the improvement of information services. The construction of a space picture receiving station, a solar energy laboratory and housing units have all contributed to the expansion of the KACST campus.

**Key Issues**

In spite of the remarkable success of the past four Development Plans, there are a number of issues which must be addressed in order to overcome future development constraints.

**Technology Gap**

After two decades of successful development, the most prominent science and technology issue facing the Kingdom concerns the gap between the level of technology used in the Kingdom and that which Saudi Arabia can adapt or produce itself. While many sectors of the economy have introduced the most advanced technologies quite successfully, the capability to develop science and technology falls far behind that of the industrial countries. It will not be possible to close this gap within a short period, but efforts must be made to reduce it as much as possible, through several measures such as the greater concentration on science and engineering subjects in the education system.

**Human Resources in Science and Technology**

At present, human resources in science and technology -- scientists, engineers and technicians -- are not sufficient in quality or quantity to ensure future substantial development. Even the recent increase in the number of students has not produced an adequate supply of manpower in science and technology. It is now essential that a strong science and technology base for further development be firmly established by upgrading the level and quality of education in these fields. In addition, vocational training efforts need improved curricula and greater capacity so that the demand for highly skilled technical manpower can be met.

**Science and Technology Infrastructure**

Advances in science and technology will require more than human resource development however. As the influence of technology permeates society, an improved infrastructure for
science and technology becomes vitally important also: better information services, a patent protection system, and greater popular awareness and understanding of science and technology. A well organized infrastructure is a necessary condition for promoting a highly innovative and competitive private sector. More generally, the science and technology infrastructure must be upgraded as part of the social system itself.

**Technology Transfer and R&D Capabilities**

The dynamic nature of science and technology is characterized by daily changes and innovation. The most advanced technologies of today may become obsolete within a short period, as evidenced by the electronics industry worldwide. Thus, the national development process requires the ongoing development of science and technology, which, in turn, demands vast resources in terms of human skills, finance and time.

Great efforts must be made to determine the exact specification of educational requirements, the identification of appropriate technologies for economic diversification, and the selective use of imported know-how for cultivating the technological capacity of the Kingdom to increase its exports of manufactured goods. Without such planning efforts, precious resources and valuable time may be lost.

In the long term, it is imperative to boost and stimulate R&D activities according to the development strategy of a national 'Master Plan' for science and technology. In this regard, support for R&D activity in the Kingdom will lead to a more efficient utilization of the Kingdom's petroleum, mineral, marine and other natural resources.

### 12.4.3 Role of the Government and the Private Sector

The successful application of science and technology to national development has led to growing expectations of its economic and social benefits. Although great importance has been attached to scientific and technological progress in previous Development Plans, the Kingdom's own R&D capabilities need to be greatly enhanced. The government has a dominant role to play in pursuit of this objective, through:

- planning and coordinating all science and technology activities in the Kingdom;
- developing necessary human resources for science and technology;
- conducting R&D in areas that are unprofitable for the private sector;
- supporting and promoting R&D activities in the private sector;
- consolidating the science and technology infrastructure.
KACST is designated as the central organization for science and technology development and joins with the universities of the Kingdom -- who are also responsible for research -- to perform most of the central functions. Ministries and agencies, such as the Ministry of Agriculture and Water, SASO, SWCC and SABIC, also play significant roles in their respective fields.

The importance of the government’s role in the development of science and technology derives partly from the special nature of science and technology itself. Technological developments span multiple activities and sectors, where related organizations, research groups and individuals are numerous and diverse. Furthermore, science and technology can be regarded as a ‘public good’ in that the benefits arising from its development and application in one sector can be widely enjoyed in other sectors also. Given the scale of national financial and human resources and the lengthy time horizons involved in science and technology development, a substantial, coordinated national planning effort is needed to promote the efficient and effective utilization of scarce resources. Furthermore, since science and technology is dynamic in nature, continuous government efforts are needed to keep abreast of international development and progress.

The private sector has an equally important role in the development of science and technology, through innovation and the commercialization of R&D results and through participation in R&D at centers of excellence in the universities. Private sector efficiency and productivity are key factors for overall competitiveness and depend greatly upon R&D capabilities. There are, however, considerable risks involved in R&D that constrain private sector investment in such activities. Government sponsorship of risk-sharing R&D ventures could help to reduce the private sector’s concerns for risk aversion.

12.4.4. Policies and Main Programs

The development of science and technology during the Fifth Plan period will be guided by the following policies:

- Formulate a long-term plan for the future development of science and technology;
- Coordinate the R&D activities undertaken by KACST;
- Conduct and promote R&D activities oriented towards the development needs of the Kingdom;
- Consolidate the research infrastructure that supports scientific and technological activities;
- Promote the development of highly qualified manpower;
• Intensify and deepen public awareness and understanding of science and technology;

• Strengthen international cooperation in scientific and technological fields.

Main Programs
In accordance with these policies, ministries and government agencies concerned with science and technology will implement their own programs, while the following programs will be undertaken by KACST:

1. **Long Term Plan for Science and Technology**
   This program concerns the development of a long term master plan for science and technology in the Kingdom, based on studies of existing R&D activities and available resources. The master plan will focus on appropriate future directions of R&D, the longer term needs of Saudi society and the full coordination of multi-sectoral activities relating to science and technology.

2. **Applied Research Program**
   This program will promote R&D activities in line with national development objectives by taking account of physical, environmental and natural resource conditions of the Kingdom. In addition to the establishment and consolidation of R&D institutes, priority for research grants will be given to applied and interdisciplinary R&D projects. In order to produce fruitful research results and use them effectively, an evaluation and follow-up system for R&D activities will also be established.

3. **Supporting Services for Science and Technology**
   This program aims to consolidate the infrastructure for science and technology by up-grading computerized information services and providing the necessary patent services and legal framework for the introduction of new technologies. An important aim of the program will be to establish a technology development and transfer system to facilitate the adoption of new technologies in the private sector, thus enhancing the competitiveness of Saudi industries in international markets. The construction of KACST's campus, including basic service facilities, will be continued.

4. **Science and Technology Awareness Program**
   This program will mobilize numerous means and opportunities, such as the mass media (TV, radio, newspapers), symposia and exhibitions, as well as education at all levels, to deepen the public's awareness and understanding of science and technology. Technology-related news, programs, publications, and seminars will be made more widely available to people in general, while 'Science Clubs' and other functions will be organized for young people interested in science and technology.
A permanent exhibition of scientific and technological development and its results will be established, in addition to a reward and honor system for eminent scientists and engineers who have made substantial contributions to the Kingdom's development and to the advancement of science and technology. KACST will cooperate with and support the Ministry of Education in upgrading science and technology education, through the introduction into the educational curricula of technology subjects and intensive student experiments and demonstrations in physics, chemistry and biology.

5. International Cooperation
This program aims to advance the level of science and technology through the introduction of technology from foreign countries for further development in the Kingdom. Special efforts will be made to make such technological development appropriate to the particular circumstances of Saudi Arabia. Arab and Muslim researchers from abroad will be invited to KACST when their research interests coincide with the objectives of its institutes. Further international collaboration, in terms of joint Saudi-foreign R&D activities, will be promoted through grants from KACST in conjunction with the Offset Programs. International information services will be strengthened through linkages with GULFNET, BITNET, and other computerized communications networks.

12.4.5 Future Outlook and Long-Term Role of Science and Technology

Industry's ability to adapt imported technology will be consolidated according to local requirements, and development will be enhanced through technology transfer projects, such as the Offset Programs. In the agriculture sector, water conservation and land use technology will contribute towards the optimal utilization of resources and improved production methods. Digital telecommunication networks will help to integrate commercial data processing services in the Kingdom.

Scientific research and the promotion of technological activities will be further strengthened through the application of remote sensing techniques in oil exploration and through solar energy research. The development of research facilities and human resources in other fields, such as astronomy and nuclear energy, will continue.

12.4.6 Financial Allocation: Science and Technology

The planned financial allocation for KACST during the Fifth Plan is shown in Table 12.12.
### TABLE 12.12

**Fifth Plan Financial Allocation for KACST**  
**(SR million)**

<table>
<thead>
<tr>
<th></th>
<th>Salaries and Supplies</th>
<th>Operation and Maintenance</th>
<th>Projects</th>
<th>Total</th>
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</thead>
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<td>191.7</td>
<td>1517.2</td>
<td>2,387.3</td>
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