JAPAN INTERNATIONAL COOPERATION AGENCY

AGRICULTURE AND COOPERATIVE DEPARTMENT
GOVERNMENT OF BALOCHISTAN
THE ISLAMIC REPUBLIC OF PAKISTAN

BASIC DESIGN STUDY REPORT ON THE PROJECT FOR THE PROCUREMENT OF EQUIPMENT FOR AGRICULTURAL LAND DEVELOPMENT IN BALOCHISTAN PROVINCE IN THE ISLAMIC REPUBLIC OF PAKISTAN

JANUARY 1994

CONSTRUCTION PROJECT CONSULTANTS, INC.

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PREFACE

In response to a request from the Government of the Islamic Republic of Pakistan, the Government of Japan decided to conduct a basic design study on the Project for the Procurement of Equipment for Agricultural Land Development in Balochistan Province and entrusted the study to the Japan International Cooperation Agency (JICA).

JICA sent to Pakistan a study team headed by Mr. Toshikazu Isomura, South-West Asia Division, Asian Bureau, Ministry of Foreign Affairs, and constituted by members of Construction Project Consultants, Inc., from November 1 to 14, 1993.

The team held discussions with the officials concerned of the Government of Pakistan and conducted a field study at the study area. After the team returned to Japan, further studies were made, and as this result, the present report was finalized.

I hope that this report will contribute to the promotion of the project and to the enhancement of friendly relations between our two countries.

I wish to express my sincere appreciation to the officials concerned of the Government of the Islamic Republic of Pakistan for their close cooperation extended to the team.

January, 1994

Kensuke Yanagiya

Kensuke YANAGIYA
President
Japan International Cooperation Agency

January, 1994

Mr. Kensuke Yanagiya
President
Japan International Cooperation Agency
Tokyo, Japan

Letter of Transmittal

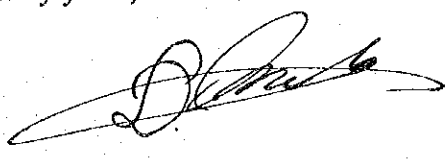
We are pleased to submit to you the basic design study report on the Project for the Procurement of Equipment for Agricultural Land Development in Balochistan Province in the Islamic Republic of Pakistan.

This study was conducted by Construction Project Consultants, Inc., under a contract to JICA, during the period November 1 to 14, 1993. In conducting the study, we have examined the feasibility and rationale of the project with due consideration to the present situation of Pakistan and formulated the most appropriate basic design for the project under Japan's grant aid scheme.

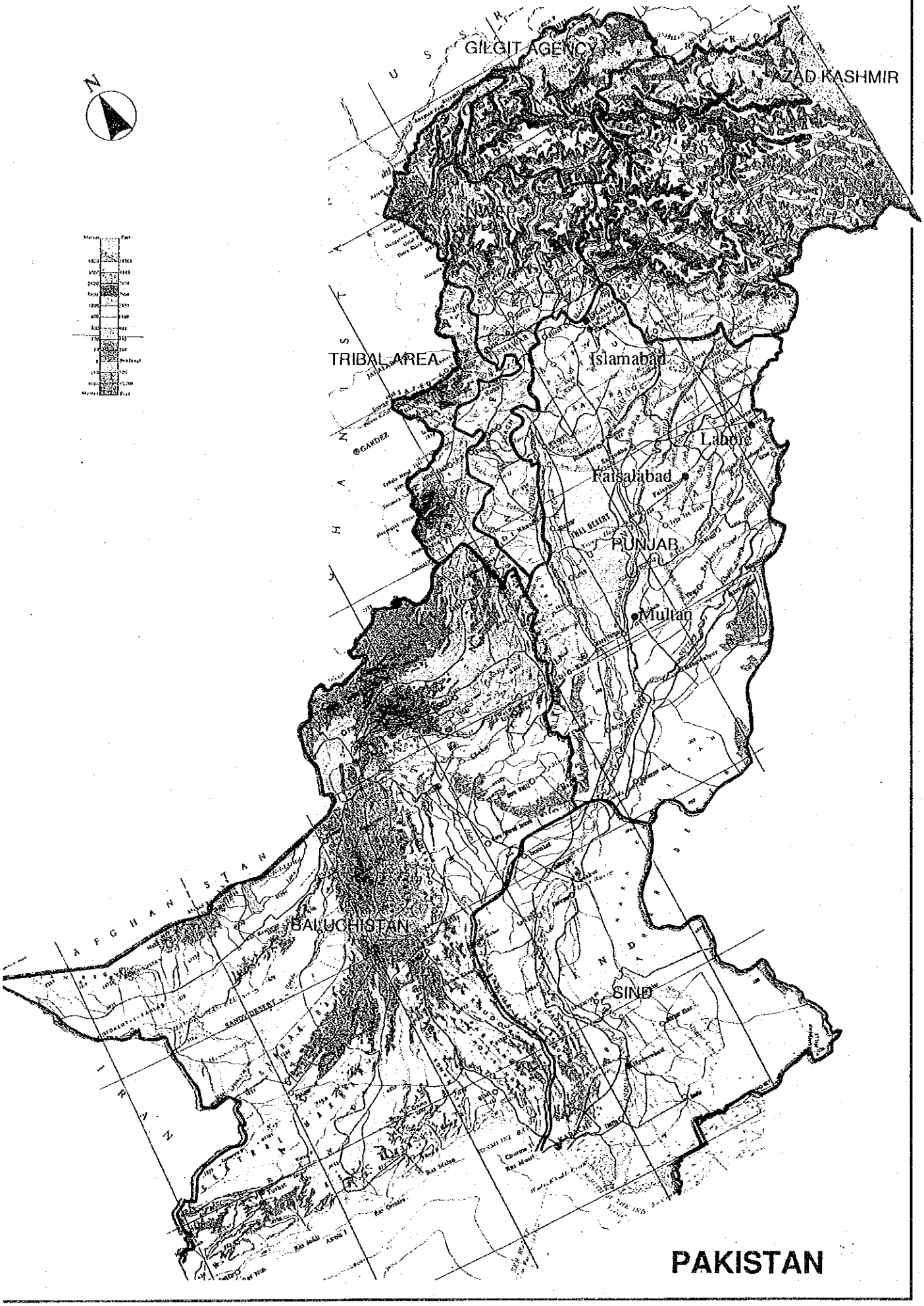
We wish to take this opportunity to express our sincere gratitude to the officials concerned of JICA, the Ministry of Foreign Affairs and the Ministry of Agriculture, Forestry and Fisheries. We would also like to express our gratitude to the officials concerned of the Ministry of Finance and Economic Affairs of Pakistan, the Agriculture and Cooperative Department, Government of Balochistan, the JICA Pakistan Office, the Embassy of Japan in Pakistan for their cooperation and assistance throughout our field survey.

Finally, we hope that this report will contribute to further promotion of the project.

Very truly yours,



Daisaku Inaba
Project Manager
Basic Design Study Team on the Project for
the Procurement of Equipment for Agricultural
Land Development in Balochistan Province
Construction Project Consultants, Inc.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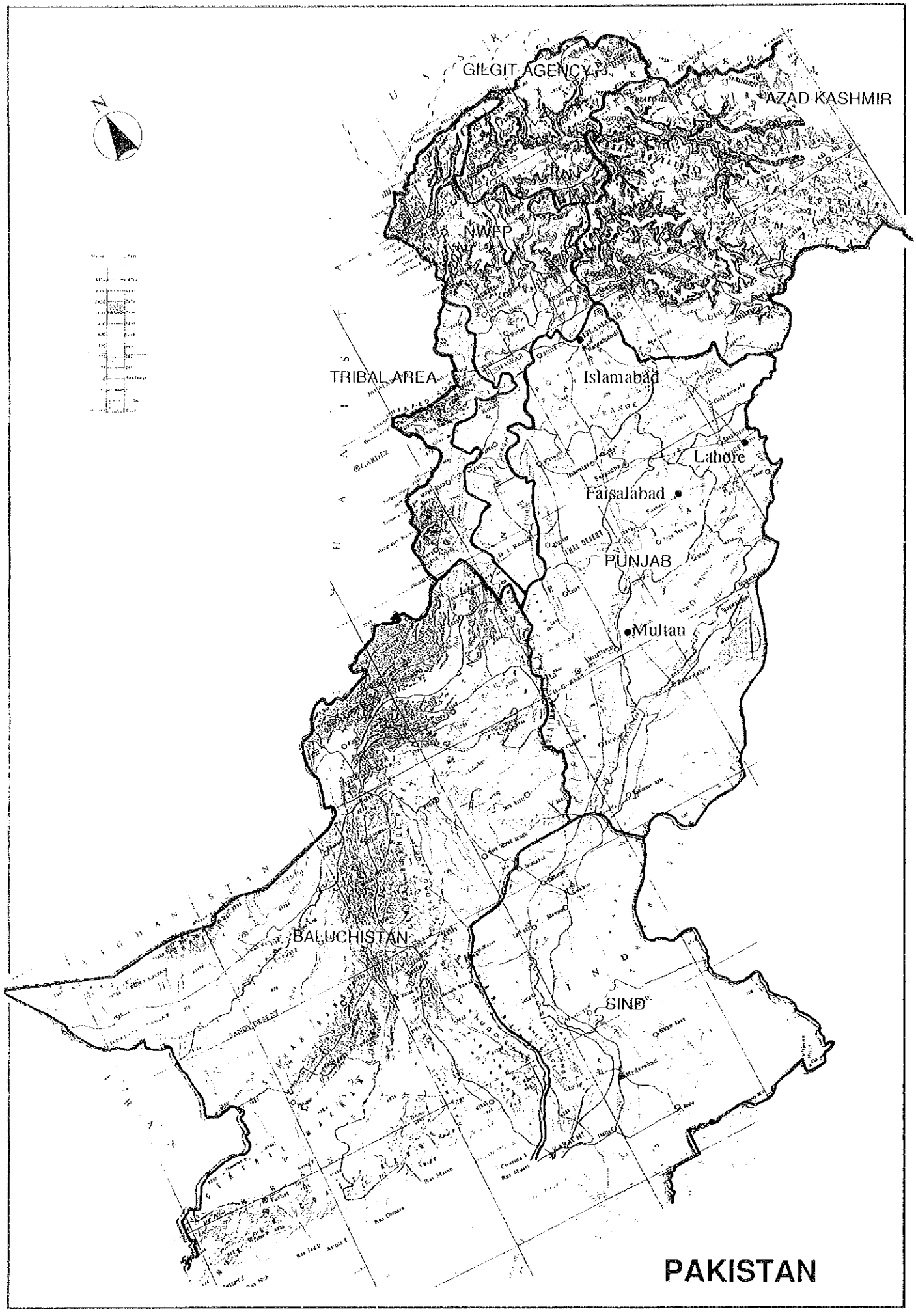
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(1) QUETTA DIVISION
- 1 Quetta
- 2 Pishin
- 3 Gulistan
- 4 Chagai

(2) ZHOB DIVISION
- 5 Zhob
- 6 Loralai
- 7 Barkhan
- 8 Killah Saifullah
- 9 Musa Khail

(3) SIBI DIVISION
- 10 Sibi
- 11 Ziarat
- 12 Kohlu
- 13 Dera Bugti

(4) NASIRABAD DIVISION
- 14 Nasirabad
- 15 Jafarabad
- 16 Bolan
- 17 Gandawa

(5) KALAT DIVISION
- 18 Kalat
- 19 Khuzdar
- 20 Mastung
- 21 Lasbela
- 22 Kharan
- 23 Awaran

(6) MEKRAN DIVISION
- 24 Turbat
- 25 Gawadar
- 26 Panjgur

BALOCHISTAN PROVINCE - District Map

SUMMARY

SUMMARY

The Government of Pakistan is pursuing its economic and social development strategy, aiming at the objectives laid down in the medium term Five-Year Plan within the framework of the Second Perspective Plan (1988-2003). The Seventh Five-Year Plan (1988-1993) placed emphasis on the improvement of the rate of self-sufficiency in food supply, expansion of employment, alleviation of poverty and promotion of education, and these objectives constitute priority objectives also in the Eighth Five-Year Plan (1993-1998). It is evident, however, that the achievement of these objectives depends on the development of the agricultural sector which employs 50 per cent of the labour force.

Pakistan's population is growing at an average rate of 3.1 per cent per annum (1981-1991), and securing food and employment for the fast growing population makes imperative the expansion of a production base in agriculture. Nevertheless, the cultivated land area per capita is declining year after year with the population growth, and has decreased by 40 per cent in the 20 years of 1972-1992. Consequently, the expansion of cultivated land, together with the improvement of the productivity of land and labour, has become imperative to cope with the situation.

Against the above background, the expansion of agricultural land has become particularly important for Balochistan Province, which is heavily dependent on agriculture, with 70 per cent of labour force engaged in agricultural sector. Balochistan Province, which has at present 4.74 millions hectares of the culturable waste land, three times as large as the cultivated land area, is promoting energetically the development of the culturable waste land into cultivated land.

The Agriculture and Cooperative Department of Balochistan has expanded the scale of agricultural land development since 1982 and developed 200,000 hectares of agricultural land in the period of 1982-1992. During the same period Balochistan Province procured 213 units of bulldozers in total in three times (1982, 1987, 1990) under the Japanese Government's KR-II aid and has developed 126,000 hectares of agricultural land or 60 per cent of the total area developed in the same period, through the renting of these bulldozers to farmers. As a result of the expansion of agricultural land, the production of major crops increased considerably in 1982-1991: wheat by two times, rapeseed two times, vegetables 2.6 times and, fruits 1.6 times.

In order to meet the growing demand for food, Balochistan Province needs to develop 35,000 hectares of agricultural land annually. However, as about half of the existing bulldozers are not in serviceable condition due to their age, the capacity of agricultural land development has now dropped to about 18,000 hectares per year, about 50 per cent lower than the planned capacity. Therefore, with a view to increasing the development capacity to at least a level of about 26,000 hectares per year, the Government of Balochistan made a request to the Japanese Government for general grant aid for the procurement of 100 units of bulldozers.

For the purpose of confirming the content of the request and of establishing the appropriate contents including auxiliary equipment, the Government of Japan decided to conduct a Basic Design Study for the Project, and a Basic Design Study Team was sent to the project site by Japan International Cooperation Agency (JICA) from November 1 to 14, 1993. The study team held discussions with the officials concerned of the Federal Government of Pakistan and of the Government of Balochistan Province, then conducted a survey of the project area and related facilities, and collected data . As a result, the following points were confirmed.

(1) The agricultural land development being promoted by the government of Balochistan Province is producing substantial results, and the development project to which the equipment requested for the grant aid is destined has a high value.

(2) Many bulldozers have passed their economic life, and the number of operable bulldozers has decreased considerably resulting in the reduction of the agricultural land development capacity. It is therefore required to supplement the fleet of bulldozers urgently in order to maintain the development capacity.

(3) Judging from the nature of works and working conditions, the selection of equipment is reasonable.

(4) The system of use, maintenance and management of bulldozers is sufficient for their effective use.

After having confirmed the content of the request, the operating condition and the management system, the priority order of project areas was studied in order to establish the most effective project plan. The study was conducted from the following points of view.

1) Situation of remaining works and urgency in supplementing the equipment.

2) Balanced progress of agricultural land development.

As a result, 9 districts have been identified as priority-A areas, 10 districts as priority-B and 7 districts as priority-C areas. The distribution of equipment was studied according to such grouping by priority, and it has been judged most effective to distribute the equipment of the present project to the priority A and priority B areas.

As the result of the preceding studies, the Basic Design Study Team proposes the ideal scale and content of the project as follows.

Content of the request		Content and scale proposed by the Japanese side	
1. Medium size Bulldozer (140-150HP)	100 units	1. Medium size bulldozer	77 units
2. Transporting vehicle	10 units	2. Spare parts for the above	spare parts for 3 years
3. Tank rolley	10 units	3. Transporting vehicle	6 units
4. Pick-up	10 units	4. Spare parts for the above	spare parts for 3 years
5. Jeep	5 units	5. Tank rolley	6 units
6. Spare parts	20 per cent	6. Pick-up	6 units
		7. Jeep	5 units

Efficient use of the 77 units of bulldozers to be procured under the Project will allow the new development of 6,000 hectares of agricultural land per year. This additional development capacity together with the present capacity of 18,000 hectares per year will allow the Agriculture and Cooperative Department of Balochistan Province to develop 24,000 hectares per year of agricultural land. This development capacity, though lower than the peak level in the past of 26,000 hectares per year, stands at a level about 20% higher than the 20,167 hectares of development realized in 1989-90, which was the highest in the four years of 1989 - 1992. This means that a substantial recovery in the agricultural land development capacity can be realized.

If the whole new developed area of 6,000 hectares per year is planted with wheat, about 11,000 tonnes of output can be expected. The number of farmers who would benefit from the agricultural land development is estimated at about 2,000 per year, with a total farming population of about 14,000 including farmers' household members benefitting. The Agriculture and Cooperative Department of Balochistan Province is renting bulldozers at subsidized rental fees in order to give incentive to farmers' investment in agricultural land development, and special lower tariffs are being provided to poor farmers so as to substantially extend the number of small farmer beneficiaries.

The project will have the effect of increasing food production and of expanding employment. Moreover it will induce important derivative effects. Increased income of farming households will favour the promotion of education in rural areas and will lead to the improvement of labour productivity in the agricultural sector. Futhermore, improvement in employment will lead to poverty alleviation, and will decelerate the migration of surplus labour from rural to urban areas, thus contributing to the balanced development of urban and rural areas.

The Project is expected to produce a substantial effect as explained above and will also contribute to greatly elevating the living standards of the inhabitants of the project areas. The personnel and experience on the Pakistan side are considered sufficient for operating and managing the Project without any particular problem envisaged. It is therefore considered appropriate to implement the Project with the grant aid of the Japanese Government.

THE ISLAMIC REPUBLIC OF PAKISTAN
PROJECT FOR THE PROCUREMENT OF EQUIPMENT FOR AGRICULTURAL LAND DEVELOPMENT
IN BALOCHISTAN PROVINCE

BASIC DESIGN STUDY REPORT

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Summary

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CHAPTER 1. GENERAL

1.1 Background for Despatching the Basic Design Study Team

The Government of Balochistan Province is promoting agricultural land development with the assistance of the Federal Government as one of the primary measures for achieving the major objectives of the Long Term Perspective Plan and the Seventh Five-Year Plan, which consist of the improvement of the rate of self-sufficiency in food, expansion of exports of agricultural produce and generation of employment opportunities. Balochistan Province has, at present, 4.74 million hectares of culturable waste land which can be developed into cultivated land and is pursuing the development of this culturable waste land through the renting of bulldozers for agricultural land development to farmers.

The Government of Pakistan has been procuring bulldozers with the Japanese Government's Aid for Increased Food Production (KR-II) in order to implement the agricultural land development project with the utmost urgency, but is experiencing a serious shortage in equipment because of increasing demand for equipment and aging of equipment. Therefore, the Government of Pakistan requested General Grant Aid from the Japanese Government for the procurement of 100 units of bulldozers and auxiliary equipment which are urgently needed.

In reply to this request, the Government of Japan had decided to despatch a basic design study team, and Japan International Cooperation Agency (JICA) sent a study team headed by Mr. Toshikazu Isomura, South-West Asia Division, Asian Bureau, Ministry of Foreign Affairs, the Government of Japan from November 1 to 14, 1993.

1.2 Objective of the study

The objective of the study was to confirm the background and content of the project for which grant aid had been requested by the Government of Pakistan, study the rationality of the request and possible scope of cooperation for it, establish the most suitable proposal for such cooperation, and prepare a basic design of the content of the equipment required, and draw up a report based on the study.

1.3 Content of the study

The Basic Design Study Team conducted an investigation of the following items with the cooperation of the Federal Government of Pakistan, the Government of Balochistan Province and other relevant organizations.

(1) Confirmation of the background and content of the project
(2) Investigation of the content of the project
(3) Investigation of the plan and system for the maintenance and management of equipment.

CHAPTER 2 BACKGROUND OF THE PROJECT

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2.1 Outline of Pakistan

The Islamic Republic of Pakistan, a country in South-West Asia, is bounded by Iran, Afganistan, China and India. It has an area of 796,000 square kilometers, a population estimated at 117 million in 1991, and a GDP per capita estimated at 400 US dollars in 1991-92. The main industry of Pakistan is agriculture which contributes about 25 per cent to the GDP and employs about 50 per cent of the labour force, and the rural population accounts for about 69 per cent of the total.

The economy of Pakistan has grown steadily, maintaining an average growth rate of 6 per cent per annum during the 10 years since 1982. Pakistan has, however, several problems lying in the way of its economic development.

One is the chronicle deficit in the balance of payments: the annual deficit continued at a level of around 1.6 billion US dollars during the period of 1984-1991. The second is the low savings rate which has remained at around 13-14 per cent as a percentage of GNP. This is very low compared with the level of other Asian countries. These problems will have an unfavourable effect on the build-up of investment capital that will be required to achieve economic development through industrialization and diversification of industries.

Another challenging problem for Pakistan is the high population growth rate. According to the national census effected in 1981, the population growth rate in 1981 was 3.06 per cent per annum, and the average population growth rate in 1981-1991 was estimated at 3.1 per cent per annum, which is much higher than the Asian average of 1.8 per cent per annum. High population growth rate is obstructing increase in the rate of self-sufficiency in food, improvement in social infrastructure and services such as housing, water supply, medical facilities, and especially the promotion of primary education indespensable for raising the literacy rate, which was at the low level of 26 per cent according to the 1981 census.

The population is projected to reach 153 million by the year 2000, if it keeps growing at the present growth rate. Therefore, the most challenging issue is how to secure food for the fast growing population and also promote the expansion of primary education, which is indispensable for human resources development, through the improvement of the economic means of rural households.

The sectoral distribution of the labour force in the productive sectors shows the predominance of the agricultural sector which accounts for 51.15 per cent of the share, far higher than the 12.84 per cent for the manufacturing and 13.24 per cent for the commerce sectors (see Table 2-1).

This indicates the important role of the agricultural sector in absorbing the labour force which is rapidly growing due to a high population growth rate.

Table 2 - 1 Distribution of Employed Persons (10 years and above) by Major Industrial Division

	Distribution of Employed Persons (percentage)
Agriculture	51.15
Mining and Manufacturing	12.84
Construction	6.62
Electricity and Gas Distribution	0.83
Transport	5.24
Trade	13.24
Others	10.08
Total	100.00

Source: Federal Bureau of Statistics (Economic Survey 1992-93)

The expansion of employment opportunities in the agricultural sector is indispensable in halting the aggravation of underemployment in rural area and in preventing the concentration of surplus labour in urban areas.

Looking at the present situation of cultivated land as the gricultural production base, a distinct decline can be noted in cultivated land area on a per capita basis: cultivated land per capita, which was 0.28 hectare in 1970, dropped to 0.17 hectare in 1992. Therefore, in order to expand the labour-absorbing capacity of the agricultural sector, it is required, on the one hand, to promote the production of labour-intensive products of high value and, on the other, to develop a production base through the expansion of cultivated land.

2.2 Agriculture in Pakistan

Agriculture is Pakistan's key industry contributing 25 per cent to the GDP and employing 50 per cent of the labour force. As of 1991-92, cultivated land covers an

area of 21.11 million hectares, equivalent to 26.5% per cent of the total land area of 79.61 million hectares.

The main products are wheat, rice, maize, beans, sugarcane and cotton. The recent outputs are shown in Table 2-2. Livestock and fruit have been growing recently as contributors to cash revenue and to improvement in people's diet (See Table 2-3, 2-4).

Table 2 - 2 Output of Major Crops

Unit: Tonnes

	1988-89	1989-90	1990-91
Wheat	14,419	14,316	14,505
Rice	3,200	3,220	3,265
Maize	1,209	1,179	1,185
Beans	624	768	785
Sugar cane	36,916	35,494	35,989
Cotton (000 bales)	8,385	8,560	9,628

Summer Crops (Karif Apr.~Jun. sowing, Sept.~Nov. harvesting): rice, maize, cotton

Winter crops (Rabi Sept.~Dec. sowing, Mar.~May ~harvesting): wheat, pulses

Source: Ministry of Food, Agriculture and Cooperative (Economic survey 1992-93)

Table 2-3 Livestock Population

Unit: 1000 numbers

	1971-72	1981-82	1991-92
Cattle	14,600	15,900	17,700
Buffaloes	9,800	12,100	18,300
Sheep	13,700	22,800	22,400
Goat	15,600	26,700	38,700
Poultry	24,300	73,500	156,200
Others	3,000	3,900	5,500

Source: Livestock Division (Economic Survey 1991-92)

Table 2-4 Planted Area and Output of All Fruits

	Punjab Province		Sindh Province		NFWP		Balochistan Province		All Pakistan	
	Planted Area (1000 Ha)	Output (1000 Tonnes)	Planted Area (1000 Ha)	Output (1000 Tonnes)	Planted Area (1000 Ha)	Output (1000 Tonnes)	Planted Area (1000 Ha)	Output (1000 Tonnes)	Planted Area (1000 Ha)	Output (1000 Tonnes)
1975-79 (average)	155.1	1273.8	62.0	497.9	16.0	167.5	29.6	246.5	262.9	2185.6
1980-84 (average)	241.5	2043.4	66.8	509.1	21.1	221.8	34.0	291.3	363.3	3065.6
1989-90	293.5	2550.8	83.3	617.8	26.4	293.5	46.6	419.7	449.8	3881.8

Source : Agricultural Statistics of Pakistan 1989-90

Agricultural production varies year by year depending on climatic conditions, but as far as grains are concerned, quite a high rate of self-sufficiency has been achieved. A noticeable crop is rice which recorded a self-sufficiency rate of 130 per cent in 1989-90 and 151 tonnes of export in 1991-92.

Agricultural produce including its processed products is the biggest export item which accounts for about 70 per cent of total exports. The main export items are cotton and cotton products, which constitute the mainstay of export and account for about 36 per cent of the total exports (See Table 2-6).

Table 2-5 Rate of Self-sufficiency in Major Food Crops

Years	Wheat	Rice	Beans	Edible Oil
1985-86	88.2 per cent	182.1 per cent	91.5 per cent	29.1 per cent
1986-87	100.0	155.2	88.1	32.0
1987-88	100.0	159.6	88.4	25.8
1988-89	87.8	136.4	79.5	27.6
1989-90	90.0	130.0	92.6	26.0

Source: Department of Agriculture of the Government of Pakistan (1991-92)

Table 2-6 Major Exports by Value and Quantity

	1989-90		1990-91		1991-92	
	Quantity	Value	Quantity	Value	Quantity	Value
		Rs million		Rs million		Rs million
	(1000 tonnes)		(1000 tonnes)		(1000 tonnes)	
Raw cotton	295.0	9,550	282.0	9,553	455.0	12,944
Cotton yarn	377.4	17,917	501.1	26,675	505.9	29,170
Rice	744.0	5,114	1,205.0	7,848	1,512.0	10,340
	100 m.sq.m.		100 m.sq.m.		100 m.sq.m.	
Cotton cloth	1,018.0	12,000	1,056.0	15,199	1,196.1	20,372
Synthetic textiles	338.2	4,556	504.5	7,807	510.7	10,403
Carpets & rugs	3.3	4,923	3.5	5,003	3.9	5,709
Leather	20.6	6,002	18.3	6,184	15.6	5,991
Others		46,407		60,013		76,799
Total		106,469		138,282		171,728

Source: Federal Bureau of Statistics (Economic Survey 1992-93)

Thus, agriculture constitutes the backbone of Pakistan's economy. The Government of Pakistan has pursued, through several phases of its development plans, policies laying emphasis on the expansion of agricultural production.

Expansion of agricultural production is indispensable for securing food for the growing population and for providing employment to the rural labour force. Increasing the revenue of the rural population through the improvement of the employment rate is essential to providing markets for industrial products and for increasing savings needed in the industrial sector. The stable life of the rural population will favour the expansion of primary education, which will lead to improvement in the quality of labour and, thereby to improvement of productivity in the agricultural and other productive sectors.

Agriculture in Pakistan developed since ancient times in the Indus basin which is endowed with rich soil and water, and agricultural production in that area has kept growing owing to improvements in the agricultural infrastructure and the effective use of agricultural input. However, more than half of the cultivated land of Pakistan is arid area with an average annual rainfall of below 400mm. And it is towards these areas deprived of rainfall that efforts for the improvement of productivity and expansion of cultivated land will be directed in the future. The Planning Committee

of Pakistan has expressed its view to this effect in advance of drawing up the Eighth Five-Year Plan (1993-98).

2.3 Outline of relative projects

The National Development Plan of Pakistan consists of the Five-Year Plan (Medium Term Plan) and the Perspective Plan which defines the long term economic and social framework for the Five-Year Plan.

The following sections will outline successively the Second Perspective Plan (1988-2003) and the Seventh Five-Year Plan (1988-1993), which were the background to the request for grant aid, and the basic concept of the Eighth Five-Year Plan commencing in 1993.

2.3.1 The Second Perspective Plan (1988-2003)

The Perspective Plan provides a long term economic and social policy framework for the objectives to be realized by medium term Five-Year Plan.

The major objectives of the Second Perspective Plan have been set as follows:

- population control
- eradication of illiteracy
- improvement in electricity supply
- development of technologies
- reduction of imbalances in the national budget and balance of payments
- improvement in savings performance
- structural changes leading to increased employment opportunities

With the above objectives in view, the following development targets have been fixed.

- to reduce the population growth from 3.1 per cent to 2.6 per cent by the year 2003
- to eradicate illiteracy through full enrollment of the primary age population
- to provide the entire population with access to clean water
- to expand access to sewerage facilities
  (all the urban areas and 60 per cent of the rural areas)
- to provide telephones to about 50 per cent of the population

- to develop tertiary roads
- to expand health care facilities
- to increase power generation capacity.

2.3.2 Seventh Five-Year-Plan (1988-93)

The Seventh Five-Year Plan was formulated within the framework of the Second Perspective Plan (1993-2003) with the following national objectives in view:

- Movement towards full employment and sustainable development
- Promotion of national integration through a fundamental restructuring of education and information policy
- Improvement of the living standards in rural areas and poverty alleviation with balanced regional development
- Increasing national self-reliance in the areas of food, energy, government finance, export oriented manufacturers and defense.

The basic aims of the Seventh Plan have been set as follows:

- Expansion of employment opportunity
- Self-sufficiency in food and development of public services such as housing, insurance, education and transportation
- Promotion of private sector activity
- Development of social infrastructure: potable water, piped water supply, electricity and roads

With a view to attaining these objectives, the sectoral growth target in production has been set as follows to realize an average annual growth rate of 6.5 per cent during the plan period.

Table 2-7 The Gross Domestic Product by Sectoral Origins
Seventh Five-Year Plan (1987-88 Price)

Unit: million Rupees

	1988-89	1992-93
Agriculture (including fisheries and forestry)	143,917	181,350
Mining, Quarries	14,767	21,698
Manufacturing	108,060	159,558
Construction	29,242	57,659
Electricity, Gas	13,974	21,012
Transport and Communication	48,504	67,396
Commerce	98,611	136,379
Banking, Insurance	17,476	22,840
Housing	22,997	29,772
Government, Defence	58,565	77,637
Service	51,923	71,474
Total	618,036	846,775

Source: Seventh Five-Year Plan

The strategy adopted for achieving the target in economic growth consists of the following:

- Increasing yield per hectare
- Developing high yielding varieties
- Developing improved varieties of fruits and vegetables
- Achieving self-sufficiency in sugar
- Establishing export markets for high value crops
- Increasing the production of crude oil
- Developing steel-based electronics industries

2.3.3 Seventh Five-Year Plan (Agriculture Sector)

The Seventh Five-Year Plan projected an overall annual growth rate of 4.7 per cent for the agricultural sector. Emphasis was placed on increasing the production of the crops matching demand including export demand, and priority was given to improving the rate of self-sufficiency in edible oils and increasing the production of sugarcane, fruits, vegetables, milk and meat. The production target of major agricultural products during the Seventh Five-Year Plan has been set as shown in Table 2-8.

Table 2-8 Production Target by Products of the Agricultural Sector

- Seventh Five-Year Plan -

Unit: 1000 tonnes

	1987-88 First year	1992-93 Last year
Rice	3,300	4,220
Wheat	12,926	16,380
Barley	124	156
Millet	187	273
Barn grass	136	271
Maize	1,156	1,470
Gram	367	650
Mustard	213	340
Sugar cane	31,239	40,320
Cotton	1,513	1,649
Beans	241	250
Potatoes	620	750
Onion	550	750
Fruits	3,785	5,000
Vegetables	2,458	3,175
Rapeseed	60	321

Source : Seventh Five-Year Plan

The strategy for achieving the production target embodies the following:

- Increasing yield per hectare through use of fertilizer, improvement of soil, improvement in farm water management, production and distribution of superior varieties, development of national farm technology, economical and comprehensive crop protection.
- Promoting research on high-yielding crops and disease resistant varieties.
- Developing research institutes; raise the level of technology, assist in budget and strengthen the extension of research results.
- Improving the shortage in human resources through education and training with effective use of audiovisual equipment.
- Increasing the production of edible oils
- Expanding the production of crops adapted to ecological conditions
- Achieving the targeted production of major crops, especially rice and vegetables
- Securing of cultivated land and water resources and management of forest, rivers and grassland.

- Growing varieties of aridity resistant high yielding crops adapted to the cultivation in rain-fed agricultural areas
- Providing assistance to private farms

The target in agricultural land development for achieving the production objectives has been set as follows:

Table 2-9 Planted Area by Crops and Projected Development Area
- Seventh Five-Year Plan-

Unit: 1000 hectares

Crops	Projected Development Area
Wheat	240
Rice	195
Maize	85
Other food grains	70
Sub-total	590
Cotton	50
Rapeseed	287
Beans	60
Vegetables, spices, fruits	145
	100
Sugar cane	268
Sub-total	910
Total	1,500

Source: National Agriculture Committee Report 1986

2.3.4 Eight Five-Year Plan

In advance of the Eighth Five-Year Plan (1993 - 98) starting in 1993, the Planning Committee of the Government of Pakistan made known its basic approach (Approach Paper, 1991, May) which emphasizes the improvement in nutrition, education, health, welfare, employment and social infrastructure, which also constituted the basic aims of the Seventh Five-Year Plan. It also stresses that particular efforts will be made for poverty alleviation for the socially weak and for redress of regional disparity in development.

The development strategy in the agricultural sector will emphasize the effective use of land resources and ground water, strengthening of agriculture infrastructure and system, and development of fishing, livestock farming and forestry. The following priority actions are expected to be taken.

1) Modernization of agriculture
   - diversification of agriculture towards employment intensive and high-value crops
   - Increasing farmers' income through improved pricing and distribution system.

2) Improving the rate of self-sufficiency in food: edible oils, foodgrains, sugarcane, etc.

3) Meeting raw materials needs

4) Increasing productivity in livestock farming and fishing.

5) Improving the marketing policies of agricultural products: encouraging the production of export products.

6) Maintaining environment and conserving natural resources.

During the Eighth Five-Year Plan, efforts will be made especially to channel technology and resources to the zones, to small farms in particular, that have been handicapped due to unfavourable natural conditions. The efforts will be directed particularly towards the rainfed agricultural areas, dry-land and hilly areas that have been alienated in comparison with the areas of irrigated agriculture.

2.4 Background and Content of the Request

2.4.1 Background of the Request

Pakistan is a country mainly dependent on agriculture which accounts for 25 per cent of the GDP and 50 per cent of the labour force. The population is estimated at 117 million in 1991, and a high population growth rate of close to 3.1 percent per annum calls for a much higher growth rate of agricultural production.

In the challenging circumstances given above, the Government of Pakistan worked out in the Seventh Five-Year Plan (1988-93) an agricultural land development plan

for each province, and emphasizes as its principal agricultural policies the achievement of self-sufficiency in food through increased production and development of rural infrastructure leading to the correction of social and economic imbalances between rural and urban areas.

Balochistan Province with an estimated population of about 6.14 million (1991) is, like North West Frontier Province (NWFP) with a population of 19 million, far behind Punjab and Sindh provinces in economic development. However Balochistan Province has 4.74 million hectares of culturable waste land providing large potential for increasing agricultural production through the development of agricultural land by reclamation, levelling and the construction of dykes for refilling ground water source.

Balochistan Province has procured 213 units of bulldozers in total under three projects of the KR-II aid from the Japanese Government. The Agriculture and Cooperative Department of Balochistan Province has at present 308 units of bulldozers on their books but the number of units in operable condition is reduced to about 150. Consequently, the shortfall in equipment is causing a considerable delay in the implementation of the agricultural land development programme. It is to supplement the shortage in equipment that a request for Grant Aid from the Japanese Government was made for the procurement of 100 units of bulldozers and transporting vehicles.

2.4.2 Content of the request

A request for the Grant Aid has been made for the procurement of the following equipment required for the project of agricultural land development undertaken by Balochistan Province.

1) Bulldozer ..... 100 units
2) Transporting Truck ..... 10 units
3) Tank Rolley ..... 10 units
4) Pick-up ..... 10 units
5) Jeep ..... 5 units
6) Spare parts ..... 20 per cent

The requested equipment will be used for achieving the development target of about 7.800 hectares per year, that is, 62,400 hectares in 8 years of lifetime of the equipment. The development targets for each district are fixed as below.

Agricultural Land Development Area-Districts	Area to be developed during bulldozer lifetime (8 years)
	Unit: Hectares
Quetta	1872
Pishin	6240
Chagai	3120
Loralai	6240
Zhob	3120
Sibi-Ziarat	5616
Kohlu	1872
Dera Bugti	1872
Jafarabad	3744
Bolan	6240
Kalat	3120
Khuzdar-Awaran	6240
Kharan	2496
Lasbella	2496
Turbat	3744
Gawadar	2496
Panjgur	1872
Total	62,400

CHAPTER 3 OUTLINE OF BALOCHISTAN PROVINCE

CHAPTER 3 OUTLINE OF BALOCHISTAN PROVINCE

The Islamic Republic of Pakistan consists of four provinces and other federally administered areas, and Balochistan Province was established on the 1st July, 1970 as one of these four provinces. It is the largest province with 347.000 square kilometers of surface area, which is equivalent to 43 per cent of the total land area of Pakistan, and the province is divided into six administrative divisions: Quetta where the capital city is located, Zhob, Sibi, Nasirabad, Kalat and Mekran.

3.1 Social and economic environment

Balochistan is a province heavily dependent on the agricultural sector which employs about 70 per cent of the labour force and produces as major crops wheat, rice, vegetables and fruits. The agricultural sector's share of the labour force, estimated at 70 per cent is much higher than the average for all Pakistan (50 per cent) and indicates the importance of agriculture for the Province (see Attached Table - 3.3).

In the Seventh Five-Year Plan (1988-96), Balochistan Province implemented a development programme focusing on, 1) Generation of employment opportunities, 2) Increasing per capita income in the province, 3) Improvement of the quality of life 4) Development of socio-economic infrastructure. The pursuit of these objectives is planned to continue throughout the Eighth Five-Year Plan, and priority measures are being planned especially for the improvement of the socio-economic infrastructure in which Balochistan Province is one of the less developed areas.

The federal government is making a special effort to reduce regional imbalances and has allocated part of the federal budget as a development fund, with priority on the backward regions including Balochistan. During the period of the Sixth Five-Year Plan (1983-88) about Rs 5.1 billion of development fund was allocated to the Province, especially to ten districts requiring accelerated development in the field of agriculture, water supply, health, housing and education. In the following period of the Seventh Plan (1988-93) about Rs 2.5 billion of development fund was allocated to the Province. In addition to these funds, the Federal Government earmarked for Balochistan Province about Rs 6 billion under the Special Development Programme.

3.2 Natural environment and population

Location

Balochistan Province extends between the northern latitude 24° - 34° and the eastern longitude 60° - 70°. It borders on Iran in the west, Afganistan and NWFP in the north, Punjab and Sindh Provinces in the east, and faces the Arabian Sea in the south.

Climate

Balochistan Province is in an arid zone. Climate varies significantly by region: temperature falls to -15℃ in the mountainous area in winter and often rises up to 50℃ in the south-western desert in summer. Maximum and minimum mean temperatures as well as annual rainfall in the main cities are shown in Table 3-1. The map on the following page shows the regional distribution of mean annual rainfall.

Table 3-1 Temperature and Rainfall by District

	Cities	Maximum mean temperature (℃)	Minimum mean temperature (℃)	Annual Rainfall (mm)
1	Quetta	29.2	4.4	221.4
2	Zhob	30.0	9.1	154.6
3	Sibi	37.2	14.8	109.3
4	Khuzdar	29.3	10.4	209.0
5	Lasbella	39.2	15.2	143.5

Source: Agriculture and Cooperative Department, Balochistan

In the greater part of Balochistan Province, mediterranean winter rain dominates, but the eastern mountains and the plains extending toward the Indus Valley lie in the monsoonal summer rain area. Although Balochistan Province has the problem of aridity, the fine weather which follows the rainy season is ideal for the ripening of fruits and cereals as well as for preventing the incidence of pests and diseases.

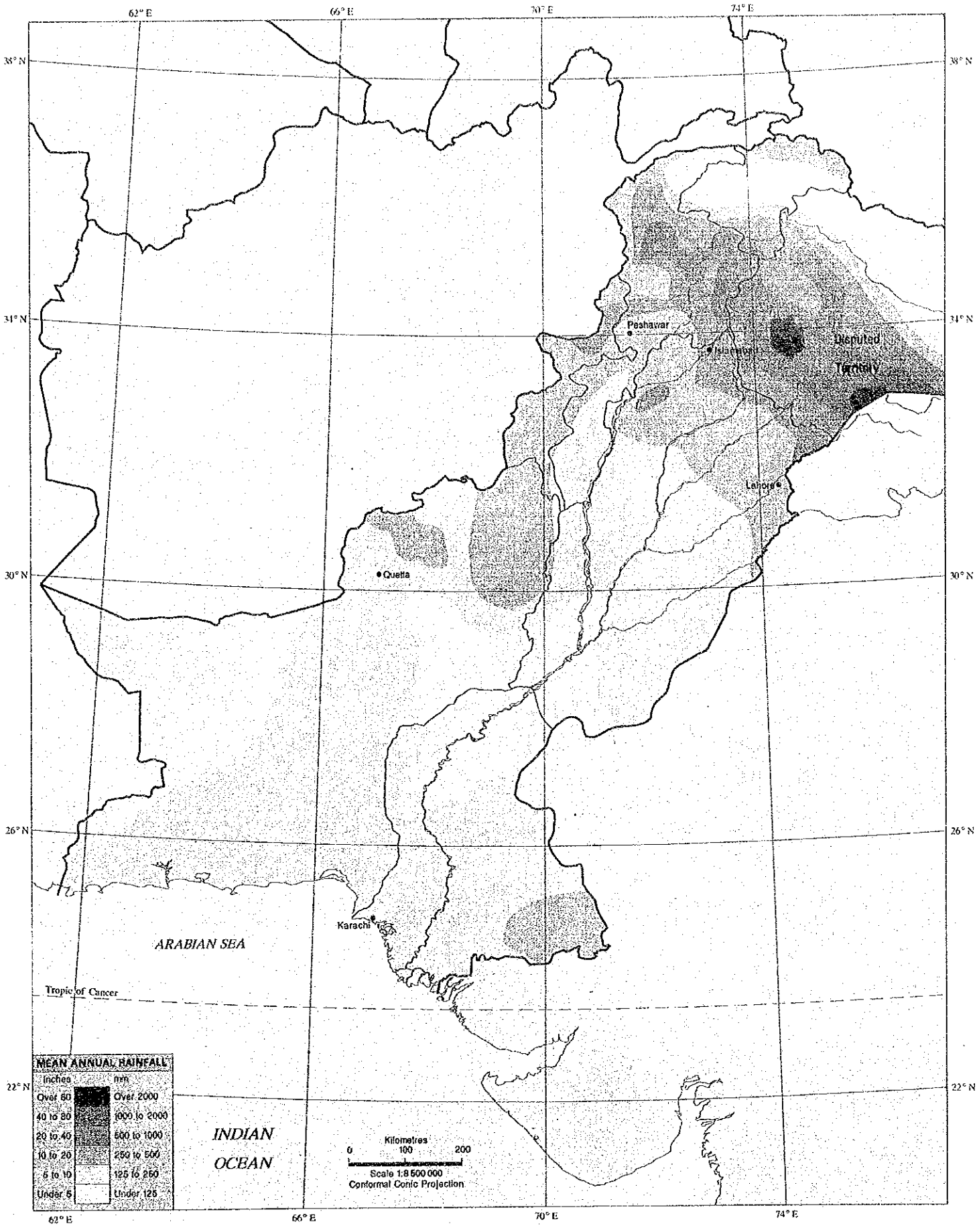


Fig. 3-1 Mean Annual Rainfall

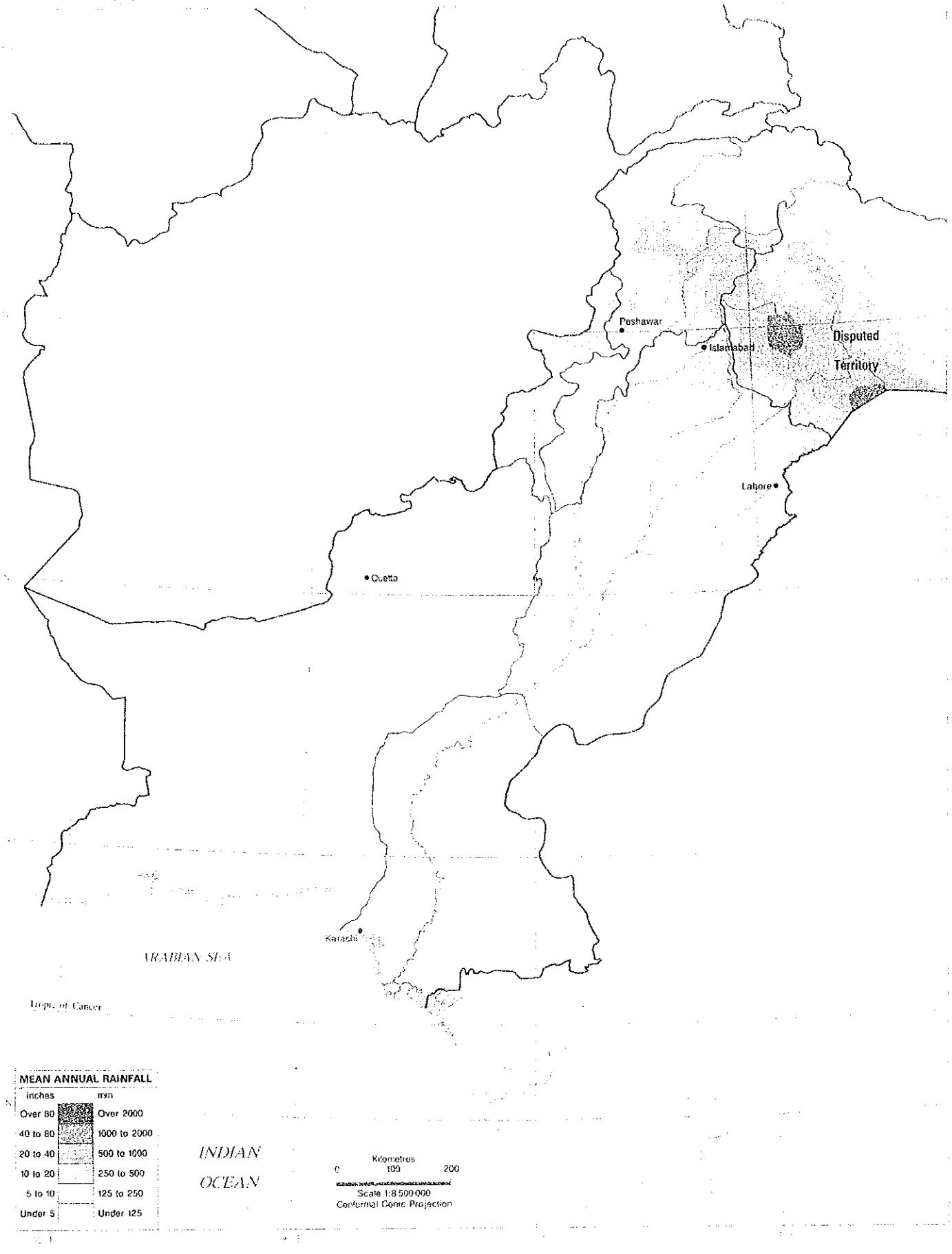


Fig. 3-1 Mean Annual Rainfall

Relief

In Balochistan Province, geographic relief is a decisive factor in the exploitation of scarce rainfall and is a determinant of agricultural crops. Run-off or run-on of rainwater creates barren slopes, vegetated lower terraces, piedmont plains and basins. Balochistan Province shows the following main relief.

- Mountains ..... 51.7 per cent
- Gravelly fans and terraces ..... 21.5 per cent
- Peidmont plains..... 11.6 per cent
- Sand plains..... 7.5 per cent
- River plains..... 2.8 per cent
- Others..... 4.9 per cent

In the east-central and northern mountain areas lie a number of high mountains reaching 2.300 m above sea level. Vegetation covers less than 20 per cent of the mountain slopes and 20-50 per cent of the steppes.

Soils

The soils have mostly a homogenous porous structure conducive to plant growth and contain a lime content of 5-30 per cent. The surface of mountain slopes is composed mainly of base rock without soil cover, but serves as a rainwater catchment area.

Population

According to the Population and Social Planning Section, Planning Division, Islamabad, the population of Balochistan Province was estimated in 1992 at 6.14 million, or about 5.2 per cent of the total population of Pakistan. The same estimate on population also shows that about 83 per cent of the population of Balochistan Province live in rural areas, which proportion is much higher than the national average, about 69 per cent. Table 3-2 below shows the estimated population of Balochistan Province and Pakistan in 1992 by residential zone. The population of Balochistan Province is increasing by 3.1 per cent per annum, and is projected to reach 7.8 million by the year 2000. The population estimates till the year 2000 are shown in Attached Table 3-3.

3.3 Social Environment

A comparison of the principal economic and social indicators of Balochistan Province and Pakistan reveals a noticeable backwardness of Balochistan Province (See Table 3-3). The economic and social indicators of Balochistan province are presented in detail in Attached Table 3-1.

Balochistan Province is making an effort to catch up on the development of its social infrastructure and educational facilities. In the Seventh Five-Year Plan, 84 per cent of the development outlay of Balochistan, equivalent to Rs 7.5 billion excluding the Special Development Program fund, have been earmarked for the social infrastructure and services. The sectoral allocations of the budget are 30 per cent for the social infrastructure such as water supply, electricity, roads, transport etc, 22 per cent for housing, 13 per cent for health and medical care and 19 per cent for education.

A crucial problem Balochistan Province faces in the pursuit of economic and social development is a high population growth rate. Achieving economic development with a population to be supported which is growing at a high rate of 3.1 per cent per annum and will reach, by estimate, 7.8 million by the year 2000, will need the expansion of its production base in parallel with the development of a social infrastructure such as education. That is, it is necessary to increase both production capacity and labour force absorbing capacity through the expansion of the production base of the agricultural sector on which depend 70 per cent of the labour force.

3.4 Agriculture in Balochistan Province

3.4.1 Agricultural production

Agriculture is a key industry of Balochistan Province, employing 70 per cent of the labour force. The main products are rice, wheat, vegetable, fruits, etc., and their production in 1991-92 is shown in Table 3-4.

Table 3-4 Production and Planted Area of Major Crops:
Balochistan Province (1991-92)

Unit: 1000 tonnes

Crops	Planted Area 1000 ha	Production 1000 tonnes
Wheat	307.8	663.00
Barley	26.1	32.70
Rapeseed	31.1	21.50
Gram	20.4	16.00
Rice	110.0	290.30
Sesame	1.4	0.60
Maiz	4.5	4.20
Fruits	57.5	575.00
Vegetables	15.6	232.00
Tobacco	2.3	4.00
Sugar cane	0.5	28.70
Cotton	0.2	0.08

Source: Development Statistics of Balochistan, 1991-92

Balochistan Province's share of the national total of agricultural production is small as far as food grains are concerned: wheat 4.5 per cent, rice 8.9 per cent, gram 3.6 per cent, maize 0.3 per cent and fruits 17.9 per cent. As for crop area, wheat occupies the largest area: 43 per cent of the total crop area. Wheat spreads over nearly all districts (in the case of 19 districts divisions) but it is only in 4 disricts that more than 50 per cent of the crop area is covered by wheat: Pishin/Gulistan, Sibi, Kohlu, Khuzdar/Awaran. The rice crop area is limited to only two districts (Jaffarabad, Nasirabad) which occupy 83 per cent of the Province's total. In contrast with the production of grains, fruits and vegetables are grown in more than 50 per cent of the crop area in 6 districts: Quetta, Zhob/Killasaifullah, Ziarat, Turbat, Panjgur, Gawadar). These crop tendencies indicate that efforts of Balochistan Province are directed towards high value products adapted to the geographical conditions of the Province. In fruit growing, Balochistan Province accounts for 10 per cent of the orchards of all Pakistan and 17.9 per cent of the total production of Pakistan, which indicates the geographical advantage of the Province in fruit growing. In fact, fruits play an important role in gaining cash revenue as an export product. Output of the major fruits is shown in Table 3-5.

The crop pattern in Balochistan Province (1988-89) is presented in Attached Table 3-7. The above table and relevant explanations on the crop pattern are based on

"*Agricultural Sector of Pakistan and ODA (grant aid)*" Shigemochi HIRASHIMA (1993).

In 1991-92, Balochistan Province had a cultivated land area of 1.62 million hectares, or 4.6 per cent of the total of Pakistan, and a per capita area of 0.26 hectare which is much larger than the average for all Pakistan, 0.17 hectares (21 million hectares for 119 million people). However Balochistan Province has about 56 per cent of its cultivated land in fallow, whereas it is only 23 per cent for all Pakistan. This means that the per capita sown area in Balochistan Province is smaller than the country's average: 0.11 hectare for Balochistan province and 0.13 hectare for the whole of Pakistan. Limited availability in irrigation water makes agriculture in Balochistan Province heavily dependent on rainfall, and the relatively large proportion of fallow land can be attributed to uncertainties in rainfall.

In Balochistan Province, the average annual rainfall of below 400 millimetres is insufficient for practicing normal rainfed agriculture. There is a need for harnessing the run-off of rainwater and bringing it to the farmlands. This type of agriculture, called Saliba-Bundats is widely developed in Balochistan, and the Sailaba area accounts for about 62 per cent of the total cultivated land of the province. With this method of agriculture, it is required to develop the agricultural land arranged for the introduction of the run-off of rainwater. Balochistan Province is endeavouring to expand this type of agricultural land, and has a large potential for its expansion as there still remains in the Province 4.74 million hectares of culturable waste land, three times as large as the present area of cultivated land.

3.4.2 Agricultural Land Development

Development Plan

Balochistan Province is endeavouring to improve the rate of self-sufficiency in food grains and edible oils and increase the output of export products, and the Agriculture and Cooperative Department has worked out as a draft plan the following strategies for achieving the objectives of the Eighth Five-Year Plan.

1) Expansion of cultivated land through the development of culturable waste land.
2) Effective use of irrigation water
3) Harnessing of flood water
4) Introduction of high value crops
5) Improvement of productivity and quality of products.

Concerning the expansion of cultivated land, the draft plan of the Eighth Five-Year Plan has fixed the target of agricultural land development in the Plan period at 175.000 hectares.

Strategy for Development

Agricultural land development consists mainly in creating farmland called Sailaba (Sailaba-Bundats/Dyke-Daming up of flood water). Sailaba-Bundats, hereinafter called Sailaba, is a type of cultivated land which is arranged in such way as to dam-up the rain water running off the sloped land surface or the flood water diverted from rivers, and to use the wet soil for growing crops. Sailaba takes different forms depending on the place and form of the land, but the development of agricultural land generally takes the following forms.

1) To reclaim the culturable waste land at piedmont, level the reclaimed land and construct dykes around it using the earth produced by reclamation and levelling works.

2) To prepare farming lots on river beds and build dykes around them to introduce flood water from rivers. The moisture and silt brought by floodwater make the cultivated lots suitable for farming.

3) To build small dykes at the feet of the mountains which will act as reservoirs for refilling wells and underground water canals at lower-level land.

4) To expand the cultivated land by the reclaiming and leveling of culturable waste land and construction of water canals.

Development of Sailaba involves generally heavy works requiring bulldozers: excavation, piling and pushing of earth.

It is the Agriculture and Cooperative Department of Balochistan (Executing Agency: Agricultural Engineering Department, AED) who procures, owns and rents bulldozers to farmers for a rental fee in order to assist farmers' agricultural land development by reducing their initial investment. The culturable waste land developed into Sailaba becomes agricultural land suitable for farming as its soil is regularly improved by fertile silt transported by the run-off of rainwater or floodwater from rivers. Of the 1.62 million hectares of cultivated land of Balochistan Province, about 62 per cent is Sailaba, and the major crops planted in Sailaba are food grains

(wheat, barley, maize, millet), edible oil crops (rapeseed, mustard, sunflower, sesame) and pulses (gram, lentil). In the draft plan of the Eight Five-Year Plan, the Agriculture and Cooperative Department has set a production increase target at 8.11 per cent per annum for grain, 25 per cent for edible oils, 27 per cent for pulses, and is redoubling its effort to expand Sailaba to achieve the targeted output.

CHAPTER 4 CONTENT OF THE PROJECT

CHAPTER 4 CONTENT OF THE PROJECT

4.1 Objective of the Project

Balochistan Province has 1.62 million hectares of cultivated land and 4.74 million hectares of culturable waste land as of 1991-92. It plans to increase its agricultural production through the development of culturable waste land and aims to improve the rate of self-sufficiency in food, raise farmers' income level through increased production of cash crops and expand employment opportunities in agriculture.

With the above objectives in view, Balochistan Province procures the equipment required for agricultural land development and rents it to farmers at a subsidized rental charge. The operation is aimed at promoting agricultural land development by giving assistance to farmers to allow them to develop their land with minimal initial investment.

4.2 Review of the content of the Project

4.2.1 Social and Economic Value of the Project

Agriculture, employing about 70 per cent of labour force, is a key industry of Balochistan Province. Raising the level of household income while absorbing the growing labour force calls for the increased productivity in agriculture and expansion of agricultural land. Balochistan Province with scarce rainfall needs to develop Sailaba farms allowing use of the run-off of rainwater or floodwater introduced from rivers. Such type of agriculture typical to Balochistan has been producing noticeable results.

Sailaba farms occupying 62 per cent of the cultivated land of Balochistan Province constitute important areas for growing grains and pulses. The contribution of Sailaba farms to the production of major crops is presented in Table 4-1 as percentages of the total production in the province.

Table 4-1 Contribution of Sailaba-Bundats
to the total production of Balochistan Province

Wheat	27.5 per cent	Barn grass	69 per cent
Barley	45 per cent	Beans	80 per cent
Rapeseed	21 per cent	Sesame	33 per cent
Cumin	61 per cent	Castor	100 per cent
Maize	38 per cent	Melon	33 per cent

Source: Development Statistics of Balochistan, 1991-92

Cultivated land developed under the Project is also used for growing fruits such as apples, grapes and plums, if well water is available for irrigation. Especially, apples are an important export product providing cash revenue, of which Balochistan province has a share of 60 per cent of the total national output. Because of its high value, apple production has been increasing recently at about 10 per cent per year and reached 210,000 tonnes in 1991-92; a 55 per cent increase over the previous year.

In addition to the effects in production, the project will have a strong impact on the employment. According to the Agricultural Engineering Department (AED), the area of cultivated land developed with the bulldozers procured under the KR-II aid of the Japanese Government and the number of farmers who have benefitted from the land development project are as follows:

Years	Type and quantity of bulldozers	Operating hours (Total as of August 1993)	Developed area of agricultural land (Hectare)	Benefited farmers (Number of Households)
1982-83	Medium size bulldozers 140HP (117 units)	1,542,501	92,550	30,850
1987-88	Small size bulldozers 120HP (86 units)	534,841	32,090	10,697
1990-91	Medium size bulldozers 140HP (10 units)	23,325	1,400	467

By 1991-92 the number of benefiting farmers reached 42,014, and the total population who have benefited from the project is estimated at 300,000 on the assumption of farmers' households comprising seven members. The project also generates employment opportunities widely among the classes that have no means to establish farms by themselves. Thus, the project also has a high value from a social aspect.

4.2.2 Rationality and Necessity of the Project

Agricultural land development in Balochistan requires the use of bulldozers as the development involves earth moving work for constructing dykes, often on sloped land. Taking into account the conditions of terrain, soil and volume of earth to be removed, 140 HP class bulldozers have proved to be the most efficient in Balochistan Province. Experience shows that larger bulldozers are less efficient economically from the aspect of operation and maintenance cost and that smaller bulldozers are, on the contrary, less efficient due to their lack of power and are liable to experience machine trouble. The Agricultural Engineering Department has, at present, a fleet of 308 bulldozers, of which the number of units in serviceable condition has dropped to 150.

Consequently the agricultural land development capacity has been decreasing since 1989. Between 1989-90 and 1992-93, annual development area decreased from 20,167 hectares to 17,245 hectares, corresponding to 15% decrease. In the present situation where a development backlog is accumulating as farmer's demand for land development cannot be met, it is urgently required to supplement the equipment in shortage. The present project for the procurement of bulldozers is, therefore, considered necessary and rational.

The request for grant aid also includes transporting vehicles and fuel tankers. It is understandable that such auxiliary equipment will be needed for the supply of fuel oil and for quick repair at work sites, which are essential to the efficient movement and operation of the equipment to be deployed over these vast areas.

4.2.3 Implementation and Operation Programme

Implementation System

The agricultural land development project will be implemented by the Agricultural Engineering Department (AED) of the Agriculture and Cooperative Department of Balochistan Province, by means of the bulldozers to be procured by the latter. AED will assume the entire responsibility for operation, maintenance and management of the equipment. The bulldozers will be rented to farmers on their request for the development of their agricultural land. Rental will be done at fixed charges for the number of hours of operation of the bulldozers with drivers.

Development target and result

The Agricultural and Cooperative Department, in pursuing its long-term agricultural land development plan, has set the annual development target at 35,000 hectares. Achievement of the target will require about 460 units of bulldozers constantly, while the number of existing units is only 308. Furthermore, nearly half the existing units are no longer in an operable condition as they have passed their economic life, and the number of units actually available for operation has dropped to about 150. Consequently, achievement of the targeted agricultural land development has become extremely difficult. The development record since 1989 shows that only half the target has been achieved (see Table 4-2), and the annual development area is declining every year. Under the circumstances, in order to halt further decline of its agricultural land development capacity, the Agriculture and Cooperative Department of Balochistan Province needs urgently to supplement their bulldozers in shortage.

Table 4-2 Annual Workload and Achievement

Year	Targeted workload (Hours)	Work done up to 31.8.93 (Hours)	Leftover (Hours)	Developed Area (Hectares)
1989-90	690,599	336,120	354,479	20,167
1990-91	550,677	301,035	249,642	18,062
1991-92	646,973	292,728	354,245	17,563
1992-93	545,087	287,451	257,636	17,245
1993-*	269,968	55,506	214,480	3,330

Operating Budget

The agricultural land development project has been implemented with an annual budget of 100 to 130 million Rupees. The operating budgets and revenues in 1989-1990 through 1993-96 are shown in Table 4-3.

Table 4-3 Agricultural Land Development
Budget Allocation and Revenue

Unit: Million Rupees

Year	Budget Allocation	Revenue Earned on Subsidized Rates
1989-90	122.433	92.580
1990-91	91.211	32.701
1991-92	110.010	66.132
1992-93	138.997	57.268
1993-94*	122.178	3.653
	574.829	252.334

* 1st July - 31st August

All revenues from the rental of equipment are paid to the provincial government, and the operation of the project is done with a budget allocated separately by the provincial government.

Rental Fee of Bulldozers (Subsidized rate)

The rental cost of bulldozers covering only operation, maintenance and management amounts to Rs 600 per hour, but the cost including depreciation of bulldozers will amount to Rs 1200. However, bulldozers are actually being rented at subsidized charges as follows:

1) Work for agricultural purpose against cash payments .....Rs 250/hour

2) Work for agricultural purpose against special funds .....Rs 300/hour
   * Development subsidized by the funds of M.P.A./Chief Minister/Governor /government financed scheme. Rs 30 are paid by farmers and Rs 270 paid from these funds. Development with special funds is applied only to poor farmers, and those who are

benefiting from this type of development account for 10 per cent of all farmers who develop their land under the project.

3) Works for non-agricultural purpose against each payment.....Rs 700/hour
Special works such as repair of the roads damaged by floods, etc. (This type of work accounts for about 1 per cent of all works).

There are large differences between actual rental costs and collected charges. This is due to fluctuations in outputs and uncertainties in revenue from the agriculture which is highly dependent on natural conditions, especially rainfall. Therefore, Rs 250 of the present tariff is said to be almost the maximum that farmers can afford as equipment cost if the feasibility of the investment in agricultural land development is to be maintained. It is to be noted that the present tariff of Rs 250 was raised from Rs 150 in 1992.

Beneficiaries (Farmers renting bulldozers)

In the case of Quetta Division, distribution of beneficiaries of the bulldozer rental by land ownership and by rental hours are recorded as follows.

(July-December 1992)

Beneficiaries by land ownership			Beneficiaries by rental hours		
Land ownership (Hectare)	Beneficiaries (Persons)	per cent	Rental hours (Hours)	Beneficiaries (Persons)	per cent
- 2	0	0.0	- 50	38	38.8
2.01 - 5	42	60.9	51 - 100	20	20.4
5.01 - 10	20	29.0	101 - 500	32	32.7
10.01 - 20	2	2.9	501 -	8	8.2
20.01	5	7.2			
Total	69	100		98	100

Distribution of beneficiaries by land ownership shows that landowners below 5 hectares account for 61 per cent and those below 10 hectares 90 per cent of the total beneficiaries. The number of beneficiaries including those who applied for the rental of bulldozers as a group was 98 persons, of whom 39 per cent were alloted less than 50 hours and 59 per cent less than 100 hours. More than half were allotted less than 100 hours, but there were 8 persons who were provided with bulldozers over 500

hours. The distribution of beneficiaries shown above is an example of Quetta Division, but it indicates the general tendency in the distribution of beneficiaries.

The above comment on the distribution of beneficiaries is based on the report by Shigemochi HIRASHIMA, (1993).

4.2.4 Similar Projects and Relations with Other Countries' Aid Program

As far as the procurement of bulldozers for agricultural land development is concerned, the procurement of the 100 units of bulldozers for which Japan's grant aid has been requested, is the only ongoing project. The sizes, quantities and finance sources of the bulldozers procured by Balochistan Province since 1979 are shown in Table 4-4.

Table 4-4 Procurement Record of Bulldozers (After 1979)

	Year	Size	Country of Origin	Source of Finance	Quantity
1	1979-80	140HP	UK	grant aid	40
2	1982-83	140HP	Japan	KR-II	117
3	1987-88	120HP	Japan	KR-II	86
4	1987-88	120HP	China	Barter	55
5	1990-91	140HP	Japan	KR-II	10
Total					308

The implementation of the agricultural land development project is far behind the programme as the procurement of bulldozers cannot satisfy the required quantity and also because most of the bulldozers procured from China broke down after a short period of use. (See Table 4-2).

It has been ascertained therefore that the Department of Agriculture and Cooperative, Balochistan has a strong desire for the procurement of Japanese bulldozers because of their superior mechanical reliability resulting in a high working efficiency and long economic life.

4.2.5 Elements Composing the Project

The project as a whole consists in developing agricultural land through the procurement and rental of bulldozers. In view of the fact that the agricultural land development can be done only with bulldozers as mentioned in Chapter 3 (3.4.1) and that the results of agricultural land development have proved the adaptability of the requested equipment to the relevant work, it is considered as quite reasonable that the principal part of the equipment to be procured consists of medium size bulldozers.

4.2.6 Requested Equipment

The grant aid has been requested for the following equipment

1) Bulldozer (140-150 HP)..... 100 units
2) Transporting Vehicle..... 10 units
3) Tank rolley ..... 10 units
4) Pickup..... 10 units
5) Jeep..... 5 units
6) Spare Parts ..... 20 per cent

Past records of the use of bulldozers prove the rationality in the selection of their capacity. The need for auxiliary equipment such as transporting vehicles for ensuring efficient operation of the bulldozers to be deployed over vast areas is understandable. As the auxiliary equipment was excluded from the KR-II aid project, the Agriculture and Cooperative Department, Balochistan hopes to realize its procurement on the occasion of the present request for grant aid.

4.2.7 Basic Policy on Cooperation

The Project is an important and urgent one for Balochistan Province. As a result of the preceding studies, the effect and reality of the project as well as the implementing capacity of the recipient country have been confirmed. It has also been ascertained that the effects of the project meet the ideals of the general grant aid. Consequently, it has been judged as rational to implement the project with the general grant aid of the Japanese Government.

However, the content of the requested project should be partly changed as explained in the section which reviewed the content of the request.

The Government of Japan has assisted Balochistan Province in procuring 213 units of bulldozers in total since 1982-83 under three KR-II aid (Aid for Increased Food Production) projects. If the present project is implemented, the total quantity of procurement under the grant aid will become considerably large.

The Agriculture and Cooperative Department of Balochistan has been procuring small size bulldozers, transporting vehicles, pumps, chemical products, large quantities of fertilizer and general agricultural machines with their own funds or with the aid of countries other than Japan. But it has become evident through experience in use that bulldozers and transporting vehicles of other than Japanese make are considerably inferior in quality and lower in performance and durability. Therefore, the background to choosing only a Japanese make in the procurement of medium size bulldozers is quite understandable. What should be appreciated is the effort made by Balochistan Province to procure with its own funds the spare parts and machine-tools needed for the maintenance and repair of these bulldozers. Nevertheless, if Balochistan Province continues to rely solely on the Grant Aid of the Japanese Government for the procurement of bulldozers, there is a risk that the procurement will be insufficient for the quantity required for its development project. Therefore, in order to ensure the implementation of the important project of agricultural land development, it will be necessary to expand the finance sources including its own. However, this matter does not concern only Balochistan Province but Pakistan as a whole.

4.3 Outline of the Project

4.3.1 Implementing Agency and Operation System

The implementation agency of the Project is the Agricultural Engineering Department (AED) of the Agricultural and Cooperative Department, Government of Balochistan. The Agricultural and Cooperative Department assumes the following functions:

- Agricultural production
- Establishment of agricultural policy
- Extension and guidance
- Research and development
- Distribution of fertilizer
- Lending of agricultural properties
- Irrigation and drainage
- Mechanization of agriculture

- Agricultural land development
- Well digging
- Production and distribution of seeds
- Collection and distribution of agricultural products
- Soil protection

Balochistan Province is divided into six administrative regions and further subdivided into 26 districts. The Agricultural Engineering Department (AED) takes charge of the management of their equipment through an office established in each district. As shown in the organizational chart (Attached Chart - 1), AED is being managed by a Department Director, 10 Agricultural Engineers and 28 Assistant Agricultural Engineers. The entire staff of the Department, including those on the reinforcement plan, number 1,732, and their composition is as follows:

Director	1
Agricultural Engineer	12
Assistant Agricultural Engineer	56
Instructor	6
Bulldozer Operator	364
Mechanic	92
Electrician	46
Driver	121
Machine-tool Operators	31
Office staff, other staff and workers	1,003
Total	1,732

4.3.2 Project Plan

The Agriculture and Cooperative Department, Balochistan plans to develop annually 35,000 hectares of culturable waste land into cultivated land, and constantly requires a fleet of 460 units of bulldozers to achieve this development target. However the number of units in operable condition is reduced to about 150, and the development target had to undergo a substantial downward revision. The Agriculture and Cooperative Department, Balochistan estimates the agricultural land development capacity with the existing units of bulldozer, including those under repair, at 18,000 hectares per year, and has established the development program after 1993-94 based on this capacity. Therefore the 77 units of bulldozers to be procured under the grant aid of the Japanese Government will allow the new development of 6,000 hectares of agricultural land per year, and will increase the total development capacity to 24,000

hectares per year. (See table 4-5). This development capacity corresponds to about 120% of the development record in 1989-90, when 20,167 hectares of agricultural land, the largest in 1989-1992, was developed.

Table 4-5 Agricultural Land Development Program

	Agricultural Land Development using the existing bulldozers	Agricultural Land Development using the 77 units to be procured under the grant aid	Total
1993-94	18,000	–	18,000
1994-95	18,000	6,000	24,000
1995-96	18,000	6,000	24,000
1996-97	18,000	6,000	24,000

In 1993-94, the Agricultural and Cooperative Department plans to develop 18,000 hectares of agricultural land with an operating budget of 122 million Rupees as follows

Staff salary and allowances	Rs 61,125,180
Purchase of machinery	Rs 1,854,000
Repair and maintenance	Rs 13,515,980
Commodities and services	Rs 4,414,670
Power and Fuel.....	Rs 41,267,410
Total	Rs 122,177,240

4.3.3 Project Area

The agricultural land development project using bulldozers will be implemented throughout all 26 Divisions of Balochistan Province. Deployment of bulldozers by district as of 31st August 1993 is shown in Attached Table 6. The bulldozers to be procured under the grant aid will be used for the agricultural land development in the following districts that have been designated by the government of Balochistan as the priority development area (Priority-A area) and the secondary priority development area (Priority-B area.)

Priority A	Priority B
1. Chagai	1. Pishin
2. Kharan	2. Gulistan
3. Bolan	3. Panjgur
4. Khuzdar	4. Awaran
5. Turbat	5. Kalat
6. Loralai	6. Lasbella
7. Nasirabad	7. Barkhan
8. Gandawa	8. Kohlu
9. Musakhel	9. Sibi
	10. Zhob

4.3.4 Outline of the Equipment

The equipment required for the agricultural land development project is the medium size bulldozer (140-150 HP). The works involved in the agricultural land development are mainly the cutting down of slopes, levelling of land and construction of dykes. Taking into account the type of work, general characteristics of soil and geographical conditions, this class of bulldozer is considered optimal from the point of view of economic efficiency and reasonable load on the machine.

As for the specifications, it is recommended to adopt the equivalent to those of the bulldozers procured in the past under the KR-II aid, which have proved their durability and economic efficiency. The main specifications are as follows:

Model:	Crawler tractor
Engine:	140HP (min), Diesel
Operating weight:	Not less than 13,000 kg
Accessories:	Angle blade
	Hydraulic unit
	Hour-meter
	Pre-cleaner extension
	Wet type air cleaner
	Dual fuel filter
	Traction unit
	Canopy

Specifications recommended for the auxiliary equipment are as follows

(2)	Transporting vehicle:	6 x 6	Maximum load 20 t
(3)	Tank rolley:	6 x 4	Tank capacity 7,000 l
(4)	Pick-up:	4 x 4	Double cabin
(5)	Jeep:	4 x 4	Admissible number of passenger

4.3.5 Maintenance and Management Plan

The Agricultural Engineering Department (AED) has on its books 308 units of bulldozers including those procured with the KR-II aid of the Government of Japan. These bulldozers have been distributed to 26 District Offices through 6 Divisional Offices of AED, and used for the agricultural land development project under the management of the Agricultural Engineer and Assistant Agricultural Engineer of each district.

As shown in Separate Figure-2, the Agricultural Engineering Department (AED) has under its control 6 Divisional Workshops, of which three function as base workshops, and 17 Districts Workshops totaling 23, and undertake the maintenance and management of bulldozers through its organization.

Among the six Divisional Workshops, three function as base workshops: Quetta in the capital city, Khuzdar in the center of the province and Turbat in the southern part of the province where irrigated agriculture is practiced with water brought from the Dashi river. The base workshops have 50 to 150 staff placed under the management of the Assistant Agricultural Engineer and are equipped with facilities required for overhaul as well as large machine-tools for making spare parts. Three other Divisional Workshops are annexed to the Division Office of each division and are placed under the management of the Assistant Agricultural Engineer. Like the central workshops these workshops are equipped for overhauling but not provided with such equipment as fuel injection pump testers requiring a high level of operational expertise.

The main functions of the District Workshops are the checking of bulldozers and trouble shooting in the case of machine troubles. They are equipped to back-up the operation of bulldozers assuring mainly their repair at work sites, but four of them are equipped with workshop facilities allowing simple work such as dismounting and mounting of engines. In the three districts with no workshop, staff attached to each

District Office can provide check-up and maintenance services. A District Workshop has 5 to 10 staff each and functions under the control of the Assistant Agricultural Engineer who is the manager of the District Office. Locations and organization of workshops are shown in Attached Chart-2, and equipment and staff of each workshop in Attached Table 4.

During the study of the project area, the study team inspected workshops at the following three places:

1) Base workshop ..... 1 (Quetta)
2) Divisional Workshop..... 1 (Pishin)
3) District Workshop ..... 1 (Mastung)

Base workshops are equipped with heavy machines designed for the overhaul of bulldozers, which are not found in other Divisional Workshops, and the study team viewed these machines in actual operation when they visited the workshops.

Generally, machine tools are old and are in need of replacement. Those installed in Quetta Regional Workshop, which are shown in Attached Table 5-1 are mostly old, but are still operating owing to their high competence in equipment maintenance.

It has been noticed that Divisional Workshops are not equipped with overhead cranes, but workshop staff are handling heavy materials skillfully using mobile crane and forklift. Most of the divisional workshops are found to be insufficiently equipped with inspection tools and measuring instruments, and it is recommended to supplement or renew them. Anyhow, as these instruments are not so costly, the Agriculture and Cooperative Department could procure them with its own budget. Thus the equipment capacity as a whole is considered sufficient for the maintenance of the bulldozers to be procured under the project.

As regards personnel, each workshop is considered to be adequately staffed with engineers and technicians. As Table 5-2 shows, it has been confirmed that the Quetta Divisional Workshop has a sufficient number of technical and other staff.

Having extensively reviewed the capacity of each level of workshop, the maintenance capacity for the existing bulldozers and those to be procured under the project is considered sufficient.

As for the daily checking and maintenance of the bulldozers to be carried out at various agricultural land development job sites, this is performed by the following staff.

(1) One operator assigned to a specific bulldozer
(2) One helper assigned to a specific bulldozer
(3) One repairman for 5 bulldozers
(4) One electrician for 10 bulldozers

Operators and helpers are dispatched from District Offices and are assigned to a specific machine number. Their professional experience varies on average from between 7 to 15 years. As for repairmen and electricians, they are dispatched periodically from District Workshops. Judging from the above maintenance system, it is considered that the daily checking and maintenance of the existing bulldozers and those to be newly procured can be carried out satisfactorily.

Concerning staff training, a training school for agricultural engineers is about to be established for the purpose of training and enhancing the technical level of technicians in the operation and repair of bulldozers. A training center of about 465 square meters has just been completed in the suburbs of Quetta city and is to be opened in 1994. One training course is for 30 trainees for a period of three months, and 3 courses per year will allow the training of 90 trainees a year. Training will be provided, at the beginning, only to the staff of AED, but the center will admit applicants from outside in the future.

The successful result of agricultural land development projects conducted over 15 years can be explained by continuous efforts in the strengthening of a back-up system for the operation and management of bulldozers in both human and physical aspects.

4.4 Technical Cooperation

Bulldozers for agricultural land development are used mainly for earth moving works such as pushing, excavating and piling of earth. These works are relatively heavy, but will not present a particular difficulty in terms of the efficient operation of the bulldozers if their daily maintenance is done properly. However, it is desirable that technical cooperation should be provided from Japan in order to assure a more efficient and economical use of the equipment through the reduction of operation and repair cost. The study team recommends that two senior engineers be dispatched to the Agricultural Engineering Department of Balochistan for a period of 12 to 18 months for the purpose of transferring technologies in the areas of periodical inspection and preventive maintenance of the machines approaching the end of their economic life. The two engineers will provide "On the Job Training (OJT)" at three base workshops, to the engineers, technicians and operators of the Divisional Workshops.

CHAPTER 5 BASIC DESIGN

CHAPTER 5 BASIC DESIGN

5.1 Design Policy

The project consists is procuring medium size bulldozers and auxiliary equipment required for agricultural land development with the General Grant Aid of the Japanese Government. The Agriculture and Cooperative Department rent these bulldozers to farmers through the Agricultural Engineering Department, the implementing agency, at subsidized rental charges in order to assist farmers' agricultural land development and expand the cultivated land of the province. Selection of equipment will be done in line with the following policy.

5.1.1 Policy on the scope and level of equipment

In order to establish the most effective project plan, the priority order of project areas was studied. As a result, of the 26 districts of Balochistan Province, 19 districts designated by the Provincial Government as priority development areas (Priority A districts) and semi-priority areas (Priority B districts) will be selected as the project areas.

Consequently, bulldozers, the main component of the requested equipment,will be distributed to the 19 districts as follows.

Priority A		Priority B		Priority C	
District	Number of units	District	Number of units	District	Number of units
1. Chagai	5	1. Pishin	5	1. Killasaifullah	0
2. Kharan	4	2. Gulistan	3	2. Jaffarabad	0
3. Bolan	7	3. Panjgur	4	3. Gawadar	0
4. Khuzdar	7	4. Awaran	3	4. Mastung	0
5. Turbat	6	5. Kalat	3	5. Dera Bugti	0
6. Loralai	6	6. Lasbella	4	6. Ziarat	0
7. Nasirabad	3	7. Barkhan	2	7. Quetta	0
8. Gandawa	3	8. Kohlu	3		
9.Musakhel	2	9. Sibi	4		
		10.Zhob	3		
Total	43	Total	34	Total	0

The specifications to be adopted for bulldozers shall be 140-150 HP which has proved to be, through experience in use in the province, the most suited to the specific need of agricultural land development for Sailaba agriculture of Balochistan Province. Taking into account the use of bulldozers in mountainous areas in winter time and in the desert in summer time, admissable ambient temperature will be set at -10°~+40°C.

As regards transporting vehicles, fuel tankers and pick-ups, each division will be provided with one unit.

However, jeeps will be provided in full requested quantity as AED is extremely short of this equipment.

Regarding equipment for which spare parts cannot be procured or are difficult to procure in Pakistan, spare parts for 3 years operation of such equipment shall be included in the scope of supply.

5.1.2 Implementation Schedule

It is estimated that, after exchange of notes, about 3 months will be needed to conclude the contract for consulting services, announcement of tender, bidding and opening of tender and completion of evaluation. Also, the procurement of equipment is estimated to require, from the conclusion and verification of the procurement contract, about 6 months for manufacturing, inspection before shipment and ocean transport, and about 2 months for customs clearance, inland transport, deployment and assembling of equipment. Therefore, about 11 months in total will be needed, but the shipment of all equipment is expected to be completed within the validity of E/N.

5.2 Basic Design

5.2.1 Equipment Deployment Plan

Deployment of the equipment to be procured under the project is planned as follows:

Division District	Equipment				
	Bulldozer (Breakdown by district)	Transport-ing vehicle	Tank Rolley	Pickup	Jeep
Quetta (Chagai) (Pishin) (Gulistan)	13 (5) (5) (3)	1	1	1	1
Zhob (Loralai) (Muskhel) (Barkhan) (Zhob)	13 (6) (2) (2) (3)	1	1	1	1
Sibi (Sibi) (Kohlu)	7 (4) (3)	1	1	1	1
Nasirabad (Nasirabad) (Gandawa) (Bolan)	13 (3) (3) (7)	1	1	1	1
Kalat (Kharan) (Khuzdar) (Awaran) (Kalat) (Lasbella)	21 (4) (7) (3) (3) (4)	1	1	1	0
Mekran (Turbat) (Panjgur)	10 (6) (4)	1	1	1	1
Total	77	6	6	6	5

5.2.2 Equipment Maintenance and Management Plan

After implementation of the Project, maintenance and management of the equipment will be undertaken by the Division Office of the project area. Periodic maintenance and repair of equipment will be done by the Divisional Workshop, or by the District Workshop if there is one attached to the District Office. Daily maintenance and repair

will be done at bulldozer work sites or at the District Workshop if there is one attached to the District Office.

The equipment maintenance and management system is shown in the Workshop Disposition and Organization Chart (Attached Chart-2). The present organization of the Agricultural Engineering Department has a management and maintenance capacity for a fleet of more than 300 units of bulldozers. Therefore it is fully capable of taking charge of bulldozers exceeding 200 units including the 77 units to be proceed under the project.

5.3 Procurement Schedule

5.3.1 Procurement Supervision Plan

A Japanese Consulting firm will supervise the project from the procurement of equipment to the receiving inspection at the project site under the assignment of the Government of Balochistan Province. The initial guidance for operation and maintenance of the equipment will be carried out by the technician dispatched from the equipment supplier under the supervision of the Japanese Consultant.

5.3.2 Implementation Schedule

The implementation schedule of the Project is shown in Fig. 5-1.

CHAPTER 6 EFFECTS OF PROJECT AND CONCLUSION

CHAPTER 6 EFFECT OF PROJECT AND CONCLUSION

The Project to be implemented by the Agricultural and Cooperative Department of Balochistan Province consists of procuring 77 units of bulldozers to be rented to farmers with the objective of developing annually about 6,000 hectares of culturable waste land into cultivated land.

Balochistan Province has a high population growth rate of about 3.1 per cent per annum, and the biggest task for the province is the expansion of agricultural land, which is vital to securing food and employment opportunities for the fast growing population. The Agriculture and Cooperative Department developed during the period of 1982-83 to 1990-91 about 200,000 hectares of agricultural land, of which 126,000 hectares, equivalent to 60 per cent, have been developed with 213 units of bulldozers procured with the KR-II aid of the Japanese Government.

The expansion of cultivated land has brought about a substantial increase in agricultural output. Between 1982-83 and 1990-91, the output of wheat increased to a level of 628,000 tonnes (two times higher than for 1982-83), barley 29,000 tonnes (5.8 times higher), rapeseed 20,000 tonnes (two times higher) and fruits 429,000 tonnes (1.6 times higher).

However, nearly half the bulldozers owned by Balochistan Province for agricultural land development are not in serviceable condition due to age, and the number of units in serviceable condition has diminished to 150. This is about one third of 460 units, the quantity required for annually developing 35,000 hectares of agricultural land.

Under such circumstances, the 77 units of bulldozers forming the object of the grant aid are the minimum requirement for avoiding any further decrease in development capacity. Therefore, Balochistan Province places a high priority on the procurement of these bulldozers.

The procurement of 77 units of bulldozers will allow the annual development of about 6,000 hectares of agricultural land. If the whole area is planted in wheat, about 11,000 tonnes of wheat will be produced annually. The farmers who would benefit from the agricultural land development are estimated at about 2,000 per year, which means that about 14,000 of the rural population, including farmers' household members, will benefit from the project. In Balochistan Province, the agricultural sector which has the largest share of the labour force will have to absorb the rapidly increasing labour force. Therefore, the expansion of the agricultural production base is indispensable for generating

employment and for improving the rate of self-sufficiency in food. Especially in Balochistan Province where intensive agriculture on irrigated land is not possible because of constraints in natural conditions, it is necessary to expand the cultivated land arranged to harness rainwater. Therefore, agricultural land development under the project is a highly effective solution. The project will also allow small farmers, who cannot afford to sink deep wells, to secure their farmland, and will widely benefit low income groups of the agricultural population.

Thus, the project will contribute to increasing the rate of self-sufficiency in food, expanding employment opportunities and alleviating poverty. It has great value for Balochistan Province and also answers the primary objectives of Pakistan's national development plan.

Furthermore, against the background of the Government of Pakistan endeavoring to correct regional disparities in social and economic development, development efforts being made by Balochistan Province are strongly supported and assisted by the central government as well.

Table 6-1 Table of Effects of the Project

Present situation and problems	Measures planned by the project	Effects of the project and extent of improvements realized
1) Population of Balochistan province is increasing at a rate of 3.1 per cent per annum and the rate of self-sufficiency in food is expected to worsen.	Agriculture and Cooperative Department of Balochistan Province procures bulldozers and rents them to farmers to assist their agricultural land development. Procurement of 77 units of bulldozers under the project will allow 6,000 hectares per year of agricultural land to be newly developed.	6,000 hectares of agricultural land to be developed annually will allow an increase, for example, in the output of wheat by 11,000 tonnes per year, and contribute to improving the rate of self-sufficiency in food.
2) In order to absorb the rapidly increasing labour force, it is essential to generate employment in the agricultural sector with the largest labour accommodating capacity	To expand cultivated land of existing farmers or develop agricultural land for new farmers, using bulldozers	Development of agricultural land for new farmers will generate employment, and expansion of cultivated land for existing farmers will have the effect of improving labour productivity and reducing under-employment of farmers. Development of 6,000 hectares per year of agricultural land by means of 77 units of bulldozers is expected to benefit about 2,000 farmers, i.e., an agricultural population of about 14,000.
3) Low income level of the rural population is impeding the promotion of education, and is thus obstructing the improvement of productivity in the agricultural and other productive sectors.	To improve farmers' income by increasing their agricultural production through expansion of cultivated land.	Improvement of farmers' income will contribute to the promotion of primary education. Improvement in the level of education will facilitate the extension of agricultural technology and will increase the willingness to work. These effects will act jointly to lead to the improvement of productivity.

4) Regional imbalances in development risk provoking massive movements of population and of thereby causing, social insecurity.	To generate employment through agricultural land development and promote the production of high value crops on the developed land	Expansion of employment opportunities through agricultural land development will have the effect of curbing the concentration of population in urban areas and give an incentive to the rural population to settle down in rural areas. Furthermore, increased savings resulting from the increased revenue in the agricultural sector will become a driving force for investment in related industries such as food processing and will have the derivative effect of generating employment.

ATTACHED TABLES AND CHARTS

Attached Table - 1 Economic and Social Indicators - Pakistan - (1/2)

		1985-85	1946-86	1987-87	1948-88	1989-89	1990-90	1991-91 (R)	1992-92 (P)
GDP (Growth Rate, Constant Factor Cost) %		6.36	5.81	6.44	4.81	4.58	5.57	7.67	3.03
Agriculture, Forestry, Fisheries		5.95	3.25	2.73	6.87	3.03	4.96	9.71	-3.89
Manufacturing		7.55	7.53	9.98	3.96	5.72	6.25	8.26	5.63
Services		5.77	5.86	6.77	3.81	4.48	5.21	6.46	5.07
Consumer Price Index (Growth Rate %)		4.40	3.60	6.30	10.40	6.00	12.70	9.60	9.6[a]
Balance of Payments (Growth Rates %)									
Exports (FOB)		19.7	18.9	24.7	6.2	6.3	19.8	14.6	..
Imports (FOB)		-0.4	-3.2	19.5	4.2	2.8	13.1	7.3	..
Trade Deficit		-14.4	-24.6	11.5	0.6	-3.4	-0.1	-9.9	..
Invisible Balance		-3.5	-12.8	-44.4	-27.0	-7.0	-47.5	136.2	..
Private Transfer (Net)		5.0	-9.4	-11.8	-6.9	5.2	-4.9	40.9	..
Workers Remittance		6.4	-12.2	-11.7	-5.8	2.4	-4.8	-20.6	..
Current Account Deficit		-26.4	-41.8	133.9	15.0	-2.2	14.8	-30.9	..
Commodity Sectors									
Agriculture									
Total Cropped Area	Mln. Hectares	20.3	20.6	19.5	21.8	21.3	21.3	21.3	21.3
Wheat	Mln. Tonnes	13.9	12.0	12.7	14.4	14.3	14.6	15.7	16.3
Rice	Mln. Tonnes	2.9	3.4	3.2	3.2	3.2	3.3	3.2	3.0
Sugar-cane	Mln. Tonnes	27.9	29.9	33.0	36.9	35.5	36.0	38.9	36.5
Cotton	Mln. Bales	7.2	7.8	8.6	8.4	8.6	9.6	12.8	9.3
Manufacturing									
Cotton Yarn	Mln. kg.	482	242	685	758	912	1,041	1,171	915[a]
Cotton Cloth	Mln. Sq.Mtr.	253	238	238	282	270	295	293	308[a]
Fertilizer	Mln. Tonnes	2.7	2.9	2.9	2.9	3.0	3.0	2.8	2.3[a]
Sugar	Mln. Tonnes	1.1	1.3	1.8	1.9	1.9	1.9	2.3	2.2[a]
Cement	Mln. Tonnes	5.8	6.5	7.1	7.1	7.5	7.8	8.3	6.3[a]
Soda Ash	1,000 Tonnes	128	130	234	144	150	147	186	147[a]
Caustic Soda	1,000 Tonnes	55	55	61	67	74	79	82	61[a]
Cigarettes	Bln. Nos.	40	40	41	32	30	30	30	26[a]
Jute Goods	1,000 Tonnes	100	114	112	104	96	97	101	77[a]
Infrastructure									
Energy									
Crude Oil	Mln. Barrels	14.3	15.0	16.3	17.1	19.5	23.5	22.4	16.6[a]
Gas	Bln. CF	380.2	402.6	437.3	455.5	497.7	522.5	550.0	433.3[a]
Electricity Installed Capacity	1,000 MW	6.3	6.7	6.8	7.1	7.8	8.9	9.3	10.6[a]
Transport and Communication									
Roads	1,000 km	126.4	133.95	142.94	151.45	162.35	170.82	179.75	..
Motor Vehicles	Mln. Nos.	1.44	1.55	1.67	1.84	1.99	2.12	2.25	..
Post Offices	1,000 Nos.	12.0	12.1	12.2	12.2	12.2	13.6	13.4	13.4[a]
Telephones	Mln. Nos.	0.63	0.68	0.74	0.84	0.92	1.19	1.46	1.57[a]

P (Provisional)
R (Revised)
a (1992.7-1993.3)

Source: Economic Survey 19920-93

Attached Table - 1 Economic and Social Indicators - Pakistan - (2/2)

		1985-85	1946-86	1987-87	1948-88	1989-89	1990-90	1991-91 (R)	1992-92 (P)
Human Resources									
(Population)									
Population	Million	97.7	100.7	103.8	107.0	110.4	113.8	117.3	120.84
Labour Force	Million	28.1	29.6	30.9	30.9	31.8	32.8	32.81	33.80
Crude Birth Rate	Per 1,000 Persons	43.3	43.3	43.3	40.5	40.5	40.5	41.00	41.00
Crude Death Rate	Per 1,000 Persons	11.5	10.1	10.5	10.8	10.8	10.8	11.00	11.00
Infant Mortality Rate	Per 1,000 Persons	115.9	105.6	103.9	107.7	107.7	107.7	108.00	104.7
Social Development)									
(Education)									
Primary Schools	1,000Nos.	77.2	97.2	105.9	103.7	110.5	114.6	119.9	124.0
Male	1,000 Nos.	54.8	73.7	81.0	76.3	80.5	84.2	88.1	90.8
Female	1,000 Nos.	22.4	23.5	24.9	27.4	30.0	30.4	31.8	33.4
Middle School	1,000 Nos.	6.3	6.8	7.0	7.8	8.1	8.5	8.9	9.3
Male	1,000 Nos.	4.4	4.7	4.8	4.9	5.0	5.2	5.3	5.4
Female	1,000 Nos.	1.9	2.1	2.2	2.9	3.1	3.3	3.6	3.9
High School	1,000 Nos.	4.7	5.2	5.5	6.6	7.2	8.0	8.9	9.8
Male	1,000 Nos.	3.4	3.7	3.9	4.8	5.3	6.0	6.7	7.5
Female	1,000 Nos.	1.3	1.5	1.6	1.8	1.9	2.0	2.2	2.3
Secondary/Vocational Institution	1,000 Nos.	293.00	501.00	560.00	999.00	929.00	725.00	688.00	710.0
Male	1,000 Nos.	188.00	242.00	271.00	544.00	510.00	381.00	377.00	390.0
Female	1,000 Nos.	105.00	259.00	289.00	455.00	419.00	344.00	311.00	320.0
Literacy Rate %	1980-81 26.2	..	..	..	..	..	..	35.0	35.0
Male	35.1	..	..	..	..	..	..	47.3	47.3
Female	16.0	..	..	..	..	..	..	22.3	22.3
(Health)									
Registered Doctors	1,000 Persons	30.0	34.0	38.6	42.9	47.3	51.9	55.6	55.6
Registered Nurses	1,000 Persons	10.5	12.0	13.0	14.0	15.9	16.9	18.2	19.4
Registered Dentists	1,000 Persons	1,4	1.6	1.6	1.8	1.9	2.1	2.2	2.2
Hospitals	1,000 Nos.	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8
Beds in Hospitals	1,000 Nos.	55.9	57.7	60.1	64.5	66.4	73.0	75.8	76.9

P (Provisional)
R (Revised)
a (1992.7-1993.3)

Source: Economic Survey 19920-93

Attached Table - 2 Grade National Products of Pakistan (1/2)
(At Current Factor Cost)

Unit: Million Rs

Sector	1987-88	1988-89	1989-90 (F)	1990-91 (R)	1991-92 (P)
1. Agriculture	156,375	184,074	197,441	233,337	268,103
Major Crops	64,934	75,804	82,929	94,648	115,382
Minor Crops	27,864	35,938	32,136	43,782	44,600
Livestock	57,438	65,038	74,237	86,219	98,595
Fisheries	4,492	5,442	5,792	6,072	6,851
Forestry	1,647	1,852	2,347	2,616	2,675
2. Mining and Quarrying	4,811	4,932	5,403	6,507	7,302
3. Manufacturing	100,917	113,517	132,329	158,947	185,546
Large Scale	73,248	80,745	93,729	112,311	129,643
Small scale	27,669	32,772	38,600	46,636	55,903
4. Construction	25,109	27,706	32,052	38,172	46,199
5. Electricity and Gas	15,690	17,093	21,470	29,672	34,034
6. Transport, Storage and Communication	51,047	54,316	60,487	76,463	94,161
7. Wholesale and Retail	100,585	115,810	129,135	154,609	177,335
8. Banking and Insurance	18,496	20,060	22,129	27,845	31,038
9. Ownership of Dwellings	27,776	30,243	34,126	39,624	46,184
10. Public Administration and Defence	57,309	65,179	69,115	76,518	84,818
11. Services	42,910	50,208	56,859	68,376	80,111
12. Gross Domestic Product (FC)	601,025	683,138	760,546	910,070	1,054,831
13. Indirect Taxes	84,494	99,361	108,641	123,437	155,889
14. Subsidies	10,130	12,754	12,549	11,211	8,374
15. Gross Domestic Product (MP)	675,389	769,745	856,638	1,022,296	1,202,346
16. Net Factor Income from Abroad	29,095	28,005	36,900	30,795	23,046
17. Gross National Product (FC)	630,120	711,143	794,446	940,865	1,077,877
18. Gross National Product (MP)	704,484	797,750	893,538	1,053,091	1,225,353
19. Population (in million)	103.82	107.04	110.36	113.78	117.31
20. Per Capita Income (FC) (in Rs)	6,069	6,644	7,226	8,629	9,188
21. Per Capita Income (MP) (in Rs)	6,786	7,454	8,097	92,256	10,446

(F) Final (R) Revised (P) Provisional

Source: Federal Burequ of Statistics

Attached Table - 2 Grade National Products of Pakistan (2/2)
(At Current Factor Cost)

Unit: Million Rs

Sector	1987-88	1988-89	1989-90 (F)	1990-91 (R)	1991-92 (P)
1. Agriculture	99,108	105,917	109,127	114,649	121,992
Major Crops	48,452	51,842	51,795	54,777	59,424
Minor Crops	16,756	18,205	19,147	19,920	20,606
Livestock	28,906	30,614	32,481	34,105	36,133
Fisheries	3,776	3,999	4,325	4,450	4,597
Forestry	1,218	1,257	1,379	1,397	1,232
2. Mining and Quarrying	2,029	2,071	2,269	2,514	2,624
3. Manufacturing	67,622	70,300	74,324	79,023	85,104
Large Scale	50,043	51,244	53,667	56,631	60,831
Small scale	17,579	19,056	20,657	22,392	24,273
4. Construction	16,563	16,937	17,466	18,462	19,556
5. Electricity and Gas	10,711	12,125	13,896	15,337	16,423
6. Transport, Storage and Communication	39,293	37,716	40,184	42,378	45,315
7. Wholesale and Retail	63,932	67,305	69,655	73,520	79,085
8. Banking and Insurance	9,452	9,743	10,111	10,447	10,637
9. Ownership of Dwellings	20,828	21,928	23,086	24,305	25,588
10. Public Administration and Defence	27,666	29,852	30,667	31,679	32,246
11. Services	28,212	30,054	32,017	34,108	36,335
12. Gross Domestic Product (FC)	385,416	403,948	422,802	446,422	474,905
13. Indirect Taxes	53,406	57,269	58,359	59,345	68,109
14. Subsidies	6,403	7,351	6,741	5,390	3,659
15. Gross Domestic Product (MP)	432,419	453,866	474,420	50,377	539,355
16. Net Factor Income from Abroad	17,100	14,933	17,163	12,182	9,125
17. Gross National Product (FC)	402,561	418,881	439,965	458,604	484,083
18. Gross National Product (MP)	449,519	468,799	491,583	512,559	548,480
19. Population (in million)	103.82	107.04	110.36	113.78	117.31
20. Per Capita Income (FC) (in Rs)	3,877	3,943	3,987	4,031	4,126
21. Per Capita Income (MP) (in Rs)	4,330	4,380	4,454	4,505	4,676

(R) Revised (P) Provisional

Source: Federal Bureau of Statistics

Attached Table - 3.1 Economic and Social Indicators of Balochistan Province

1. Area and Population

(1)	Area	347,190	Sq.km
(2)	Division	6	
(3)	District	26	

2. Population (projected, 1992)

(1)	Total Population	6.146	Million
(2)	Urban Population	1.067	Million
(3)	Rural Population	5.080	Million
(4)	Growth Rate (%)	3.06	
(5)	Literacy Ratio (%)	10.30	
(6)	Population Density (per square km)	17	Number

3. Roads

(1)	Paved Road	1,472.78	km
(2)	Earth and General Road	13,209.05	km

4. Transport 1991-92 (total registered)

(1)	Motor Cars, Jeep, Station Wagon	1,977	Number
(2)	Trucks	1,928	Number
(3)	Motor Cycles	2,852	Number
(4)	Buses	390	Number

5. Production Activities

Cultivated Area (1991-92)

(1)	Geographical Area	34.72	Million Hectares
(2)	Cultivated Area (including fallow)	1.61	Million Hectares
(3)	Cultivable Waste	4.74	Million Hectares

Crops and Fruits (1991-92)	Area (1,000 hectares)	Production (1,000 tonnes)
(1) Wheat	307.83	663.07
(2) Rice	109.95	290.36
(3) Maize	4.50	4.20
(4) Vegetable	16.12	207.96
(5) Fruits	47.14	440.28

Manufacturing (1987-88)		
(1) Number of Industries	83	Number
(2) Average Employment	10,737	Number
(3) Value of Industrial Production (Food, Textile Yarn, Bags, etc.)	4,309	Million Rs.

Livestock (1991-92)		
(1) Sheep and Goats	222,178,169	Number
(2) Buffaloes	66,373	Number
(3) Other Animals	559,597	Number
(4) Poultry	18,332,74	Number

Fish Production (1992)	103,907	Tonnes

Mineral Production (1991-92)		
(1) Coal	1,796,553	Tonnes
(2) Chromite	18,109	Tonnes
(3) Marble	30,988	Tonnes
(4) Barytes	29,977	Tonnes

6. Social Sectors

Education (1991)		
(1) Primary Schools	4,222	Number
(2) Middle Schools	582	Number
(3) High Schools	288	Number

Health		
(1) Doctors	679	Number
(2) Hospitals	60	Number
(3) Other Health Facilities	688	Number

Communication

(1)	Telegraph Offices	88	Number
(2)	Post Offices	734	Number
(3)	Telephone Exchange	207	Number
(4)	Public Call Offices	309	Number
(5)	Television Sets	10,022	Number
(6)	Radio Licences	12,385	Number

Source: Development Statistics of Balochistan 1991-92
Bureau of Statistics, Government of Balochistan

Attached Table - 3.2 Estimates of Population of Pakistan and Balochistan Province by Residence Status (1990-2000)

Unit: 1,000

Year	Pakistan			Balochistan			Share of Balochistan (%)		
	Urban	Rural	Total Population	Urban	Rural	Total Population	Urban	Rural	Total Population
1990	34,062	78,209	112,272	981	4,792	5,774	2.9	6.1	5.1
1991	35,522	30,193	115,714	1,023	4,935	5,985	2.9	6.2	5.1
1992	37,019	82,158	119,176	1,067	5,080	6,146	2.9	6.2	5.2
1993	38,563	84,108	122,670	1,112	5,227	6,339	2.9	6.2	5.2
1994	40,169	86,041	126,210	1,160	5,376	6,536	2.9	6.2	5.2
1995	41,852	87,958	129,809	1,212	5,526	6,738	2.9	6.3	5.2
1996	43,602	89,857	133,460	1,267	5,677	6,944	2.9	6.3	5.2
1997	45,409	91,740	137,151	1,324	5,830	7,154	2.9	6.4	5.2
1998	47,288	93,607	140,896	1,384	5,984	7,369	2.9	6.4	5.2
1999	49,253	95,457	144,710	1,449	6,139	7,588	2.9	6.4	5.2
2000	51,316	97,287	148,603	1,518	6,294	7,812	3.0	6.5	5.3

Source: Population and Social Planning Section, Planning Division, Islamabad
(Development Statistics of Balachistan 1991-92
- Bureau of Statistics, Government of Balochistan)

Attached Table - 3.3 Working Population by Industry, Sex and Urban/Rural Areas - Balochistan Province (1981 census)

(%)

Industry Group	All Areas			Urban			Rural		
	Total	Male	Female	Total	Male	Female	Total	Male	Female
Agriculture, Forestry, Hunting and Fishing	71.44	69.97	1.47	14.88	14.65	0.24	79.55	77.90	1.65
Mining and Quarrying	2.19	2.15	0.03	1.41	1.38	0.02	2.30	2.26	0.03
Manufacturing	1.40	1.17	0.23	5.37	4.84	0.53	0.83	0.64	0.19
Electricity, Gas and Water	0.27	0.27	0.00	1.04	1.03	0.01	0.16	0.16	0.00
Construction	3.56	3.51	0.06	8.29	8.18	0.11	2.89	2.84	0.05
Wholesale, Retail, Restaurant and Hotels	6.26	6.16	0.09	21.51	21.21	0.30	4.07	4.01	0.06
Transport, Storage and Communication	3.14	3.10	0.04	9.54	9.40	0.14	2.22	2.20	0.02
Finance, Insurance, Real Estate and Business Services	0.18	0.18	0.00	1.06	1.03	0.03	0.06	0.06	0.00
Community, Social and Personal Services	6.02	5.68	0.34	24.66	22.84	1.82	3.34	3.21	0.13
Others	5.54	5.37	0.17	12.25	11.93	0.32	4.58	4.43	0.15

Source: Population Census Organization
(Development Statistics of Balochistan 1991-92
- Bureau of Statistics, Government of Balochistan)

Attached Table - 3.4 Land Utilization Statistics of Balochistan Province
(1984-1985 to 1991-92)

Unit: Million Hectares

Year	Total Area	Cultivated Area			Cultur-able Waste	Others
		Total (4+5)	Net Sown	Current Fallow		
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1984-85	34.72	1.46	0.56	0.90	5.80	27.46
1985-86	34.72	1.49	0.60	0.89	4.80	28.45
1986-87	34.72	1.50	0.50	1.00	4.80	28.42
1987-88	34.72	1.50	0.50	1.00	4.79	28.43
1988-89	34.72	1.58	0.65	0.93	4.77	28.37
1989-90	34.72	1.60	0.69	0.91	4.76	28.36
1990-91	34.72	1.62	0.70	0.92	4.73	28.37
1991-92	34.72	1.62	0.70	0.92	4.74	28.36

Source: Director General, Agriculture, Balochistan
(Development Statistics of Balochistan, 1991-92
- Bureau of Statistics, Government of Balochistan -)

Attached Table - 3.5 Production of Major Crops - Balochistan Province

Unit: Sown area 1,000 Hectares
Production 1,000 Tonnes

	1981-82		1984-85		1987-88		1990-91		1991-92	
	Sown Area	Production	Sown Area	Production	Sown Area	Production	Sown Area	Production	Sown Area	Production
Wheat	216.10	318.20	277.40	437.10	183.27	391.70	306.00	628.20	307.83	663.07
Barley	7.00	5.00	13.37	10.69	11.09	11.83	24.50	29.90	26.10	32.70
Rice	90.50	283.90	115.78	319.80	94.88	243.50	108.70	287.10	109.95	290.36
Maize	2.40	2.00	3.66	3.18	4.55	4.05	4.50	4.20	4.50	4.20
Gram	18.20	13.50	21.08	16.10	20.00	17.05	19.90	15.60	20.40	20.40
Pulses	NA	NA	1.38	14.20	2.64	25.97	3.60	32.70	3.60	32.80
Rapeseed	18.40	9.40	24.19	13.90	18.99	13.03	29.80	20.20	31.00	21.50
Sesame	5.60	2.70	2.28	1.13	0.99	0.45	1.50	0.70	1.40	0.60
Onion	4.60	65.30	7.25	105.50	8.50	163.46	10.60	183.20	14.00	273.90
Potato	4.30	47.00	5.76	79.40	6.92	78.43	6.80	95.60	5.10	77.70
Tomato	1.40	17.80	2.86	41.39	0.36	52.22	3.87	58.97	4.70	71.68
Vegetables	13.10	166.40	20.90	306.00	25.50	348.40	29.70	427.00 (1989-90)	NA (1989-90)	NA
Sugar cane	1.30	38.80	0.90	30.30	0.50	27.30	0.50	23.50	0.50	28.70
Fruits	32.20	270.50	36.12	309.08	40.71	497.19	46.04	429.60	57.56	55.00
Tobacco	1.60	3.20	1.46	2.96	1.58	3.18	2.00	3.60	2.30	4.00
Cotton	0.30	0.50	0.40	0.90	0.50	1.10	0.20	0.08	0.20	0.08

Source: Agriculture and Cooperative Department, Government of Balochistan

Attached Table - 3.6 Production of Major Fruits - Balochistan Province
1984-85 to 1991-92

Unit: 1,000 Tonnes

Fruits	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90	1990-91	1991-92
Almonds	27.670	28.360	28.515	29.029	29.409	30.113	10.750	35.334
Apple	79.400	85.090	91.690	105.310	110.730	124.650	136.535	211.286
Apricots	39.730	41.975	46.785	50.775	52.080	60.540	64.635	91.608
Cherry	0.430	0.490	0.549	0.573	0.628	0.659	0.714	0.953
Citrus	2.750	2.840	3.316	3.506	4.071	4.526	4.676	7.608
Dates	84.500	83.600	84.940	85.605	81.215	87.590	87.950	92.553
Grapes	26.640	28.250	29.340	30.340	31.000	31.660	31.840	34.280
Guava	1.490	1.640	1.635	1.740	1.800	1.940	2.000	2.838
Mangoes	4.330	4.090	4.360	5.270	5.570	5.725	5.990	8.493
Peaches	9.150	9.640	10.355	11.475	13.550	15.520	15.395	20.219
Pear	0.970	0.970	0.974	0.974	1.009	0.930	0.930	0.930
Plum	12.460	13.035	13.860	14.990	16.150	17.730	19.090	26.570
Pomegranate	19.560	19.960	20.825	23.265	24.500	27.560	29.110	42.353

Source: Director General, Agriculture, Balochistan
(Development Statistics of Balochistan 1991-92
- Bureau of Statistics, Government of Balochistan)

Attached Table - 3.7 Cropping Pattern in Balochistan Province: 1988/89

Unit: Cultivated Area: Hectares
Fallow Ratio and Share by Products: %

	Cultivated Area	Fallow Ratio	Wheat	Rice	Fruits	Vegetable	Fodder	Cumin	Others	Total
Quetta	34,886	75.6	25.0	0	47.9	18.7	4.3	1.5	2.6	100.0
Pisin, Gulistan	90,415	56.4	59.7	0	23.3	3.7	1.9	2.3	9.2	100.0
Chagai	51,685	62.3	35.8	0	35.7	3.4	2.0	2.8	20.3	100.0
Zhob, Killa Saifullah	56,489	87.1	26.5	0	33.3	16.7	2.9	6.6	13.9	100.0
Loralai, Musa Khail, Barkhan	141,394	66.6	45.6	0	23.2	2.7	5.2	0	23.4	100.0
Sibi	81,526	72.2	59.6	0.9	6.1	8.2	7.1	0	18.0	100.0
Ziarat	11,132	82.3	0	0	95.6	0.3	1.0	0	3.1	100.0
Kohlu	22,127	53.2	86.9	0	5.1	2.9	2.2	0	2.8	100.0
Dera Bugti	14,401	87.2	22.9	0	6.6	6.7	3.3	0	60.6	100.0
Nasirabad	180,111	25.8	39.0	29.5	0.3	0.5	0.8	0	29.7	100.0
Jafarabad	206,794	11.0	39.1	35.0	0.1	0.3	2.4	0	23.0	100.0
Bolan, Jhal Magsi	257,900	83.8	85.0	2.0	2.9	2.3	9.1	0	48.6	100.0
Kalat, Mastung	120,888	66.0	48.6	0	12.7	12.0	14.1	3.5	9.1	100.0
Khuzdar, Awaran	110,155	42.8	66.5	1.1	3.6	4.3	1.2	4.0	18.7	100.0
Kharan	60,648	91.2	34.9	0	30.7	13.5	2.4	2.3	16.3	100.0
Lasbela	69,924	88.0	12.0	0.7	11.1	5.3	9.8	0	61.2	100.0
Turbat	40,349	62.7	4.0	6.2	38.5	20.2	28.4	0	2.2	100.0
Panjgur	23,277	21.5	23.2	1.9	52.0	4.1	14.8	0	9.0	100.0
Gwadar	12,626	90.0	0	0	78.6	3.3	14.3	0	3.8	100.0
Total	1,587,206	58.6	43.2	16.3	8.9	3.5	4.4	0.9	22.9	100.0

Notes 1) Fallow Ratio: Panjab Province 8.1%, Sind Province 46.0%, N.W.F.P. 20.3%
2) Cumin is kind of herb. Important crops by other classification are jower and bajra.

Source: Data of the Agricultural Engineering Department (AED), Balochistan Province, quoted from "*Agricultural Sector in Pakistan and ODA (grant aid)*" Shigemochi HIRASHIMA, (1993).

Attached Table - 4 Equipment and Staff of the Maintenance Workshops for the Equipment of Agricultural Land Development - Balochistan Province

Type of Machine / Location	Maintenance Equipment (Units)						Staff (Persons)					
	Machine Tools	Press	Welders	Testing Instrument	Mobile Workshops and Repair Tool Unit	Other Machines	Machine-Tool Operator and Mechanician	Electrician	Welders	Other Workers	Helpers	Office Staff
Divisional Workshop												
Quetta	28	1	-	4		3	12	6	2	58	64	8
Khuzdar	17	2	2	3		5	11	3	1	22	29	5
Turbat		1		4	8		14	6	3	12	5	5
Sibi	3	1	1	1		3	11	4	1	14	7	1
Loralai	4		2			1	13	4	2	7	3	-
Nasirabad (Dera Murad Jamali)			1		4	8	10	4	1	2	4	1
District Workshop												
Quetta Division												
Pishin							1	1		1	4	
Chagai							1	1		1	4	
Khuzdar Division												
Uthal	4		3			5	2	1	1	1	1	
Kharan	2		1			1	2	1	1	1		
Kalat							2			2	1	
Mastung							2	1		1	7	
Awaran												
Turbat Division												
Panjgur			1		4	8		1		4		1
Gawadar			1		4	8	2	1		1		
Sibi Division												
Kholu	4	1	1			4	4	1	1	3		
Dera Bugti			1		4	8	3	2		1		5
Ziarat							3	1		2		
Loralai District												
Saifullah							2	1		1	1	
Zhob	4		2			5	4	1	1	3	1	
Nasirabad (Dera Murad Jamali)												
Jaffarabad							Included in Dara Murad Jamali					
Gandawa							2	1		2	2	
Bolan								1		5	1	
Other Offices												
Jhal Magsi							2	1		1	2	
Musa Khail							1			1	1	
Gulistan							1			1	2	
Total	64	5	16	8	20	83	105	43	14	148	138	26

Attached Table - 5 Equipment and Staff of Quetta Workshop

5.1 Workshop Equipment

Type of Equipment	Units
Lathe	6
Turret Lathe	2
Milling Machine	1
Grinding Machine	4
Drilling Machine	3
Boring Machine	1
Line Boring Machine	1
Cylinder Boring Machine	1
Connecting Rod Boring Machine	1
Shaft Grinder	1
Valve Grinder	1
Head Facing Machine	1
Cylinder Polishing Machine	1
Connecting Rod Polishing Machine	1
Slotter	1
Shaper	1
Saw	2
Press	1
Cutter Grinder	2
Atomizer Tester	2
Fuel Injection Pump Test Stand	2
Total	36

5.2 Workshop Staff

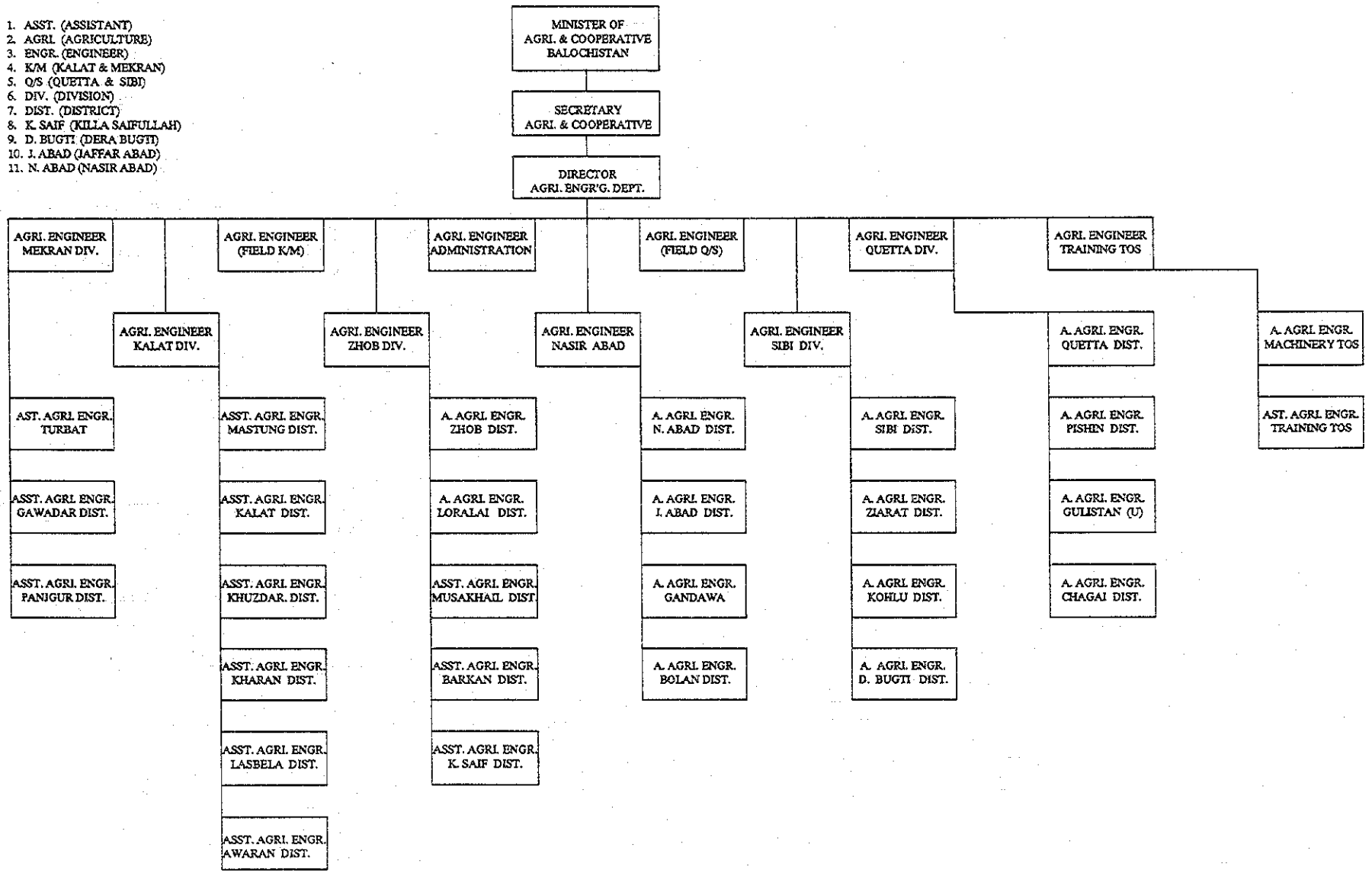
Description	Number
Workshop Superintendent	1
Foreman	7
Mechanics	7
Turner	5
Electrician	6
Metal Plate Worker	17
Welder	2
Crane Operator	2
Tool Room Staff	1
Moulder	2
Pattern Maker	1
Painter	3
Tyre Repair	4
Radiator Maker	1
Filter	20
Security Officer	2
Tyre Officer	1
Store Officer	1
Time Keeper	3
Helper	64
Total	150

Attached Table - 6 Deployment of Bulldozers (August 31st, 1993)

District	Deployment of Bulldozers			
	Total	Serviceable (including those under repair)	Out of Service for a Long Time	Waiting for Disposal
Quetta	11	7	4	0
Pishin	21	13	4	4
Gulistan	12	8	3	1
Chagai	11	9	2	0
Sub-Total	55	37	13	5
Loralai	19	10	3	6
Barkhan	5	2	3	0
Zhob	10	7	2	1
Killa Saifullah	11	9	1	1
Musa Khail	7	5	2	0
Sub-Total	52	33	11	8
Sibi	14	11	2	1
Ziarat	7	2	3	2
Kohlu	11	8	3	0
Dera Bugti	10	9	1	0
Sub-Total	42	30	9	3
Nasirabad	8	7	1	0
Jafarabad	8	2	6	0
Bolan	16	9	1	6
Gandawa	7	5	0	2
Sub-Total	39	23	8	8
Khuzdar	23	16	4	3
Kalat	12	9	3	0
Mastung	6	6	0	0
Lasbela	13	10	1	2
Kharan	9	8	1	0
Awaran	7	5	1	1
Sub-Total	70	54	10	6
Turbad	23	15	2	6
Gawadar	12	7	2	3
Panjgur	15	8	3	4
Sub-Total	50	30	7	13
Total	308	*207	58	43

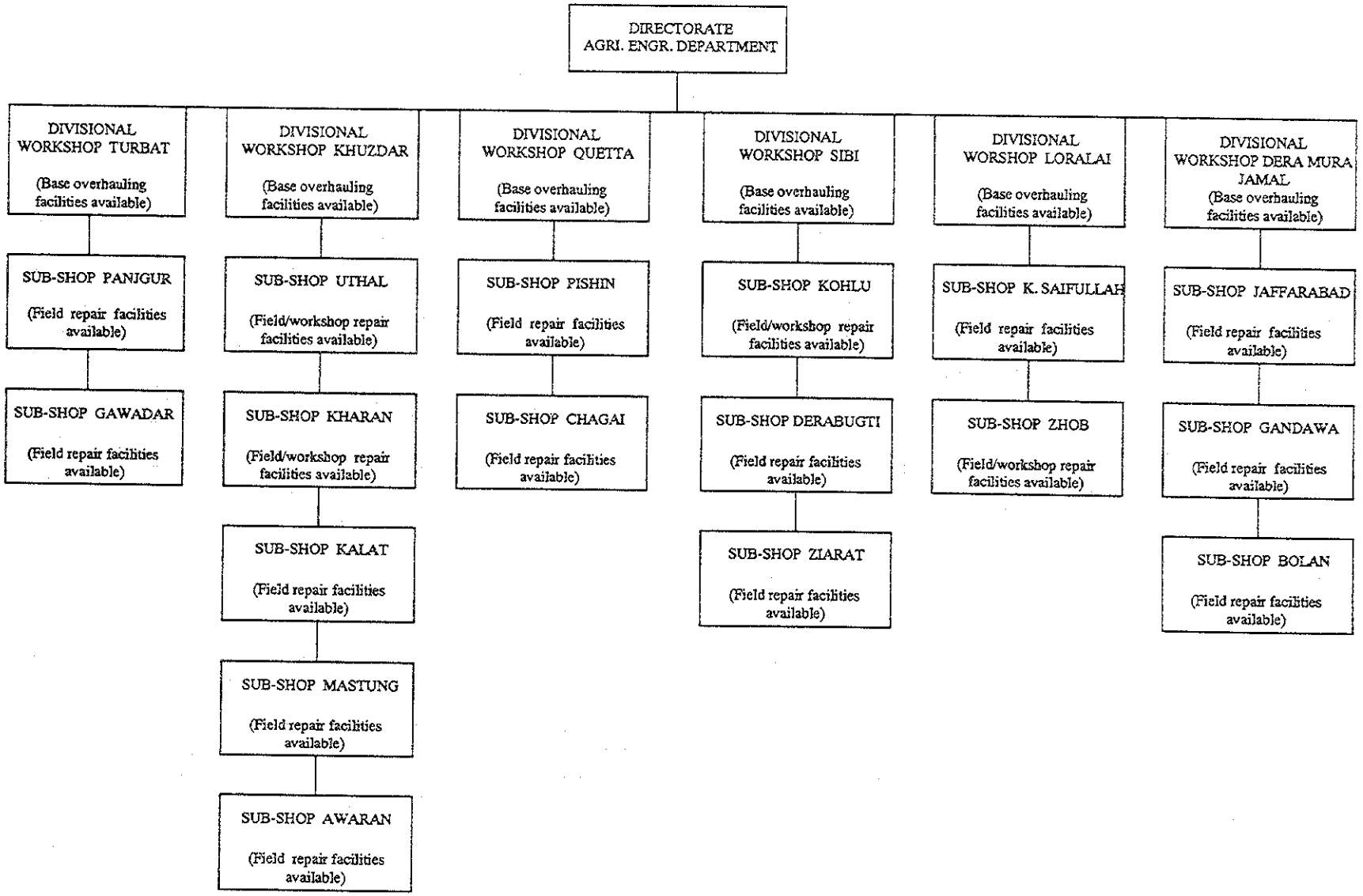
* 50 to 60 units are undergoing repair and not working

1. ASST. (ASSISTANT)
2. AGRI. (AGRICULTURE)
3. ENGR. (ENGINEER)
4. K/M (KALAT & MEKRAN)
5. Q/S (QUETTA & SIBI)
6. DIV. (DIVISION)
7. DIST. (DISTRICT)
8. K. SAIF (KILLA SAIFULLAH)
9. D. BUGTI (DERA BUGTI)
10. J. ABAD (JAFFAR ABAD)
11. N. ABAD (NASIR ABAD)



AC - 1

Attached Chart - 1 Organization Chart of the Agricultural Engineering Department, Agriculture and Cooperatives Department, Balochistan



Attached Chart - 2 Organization of Divisional and District Workshop