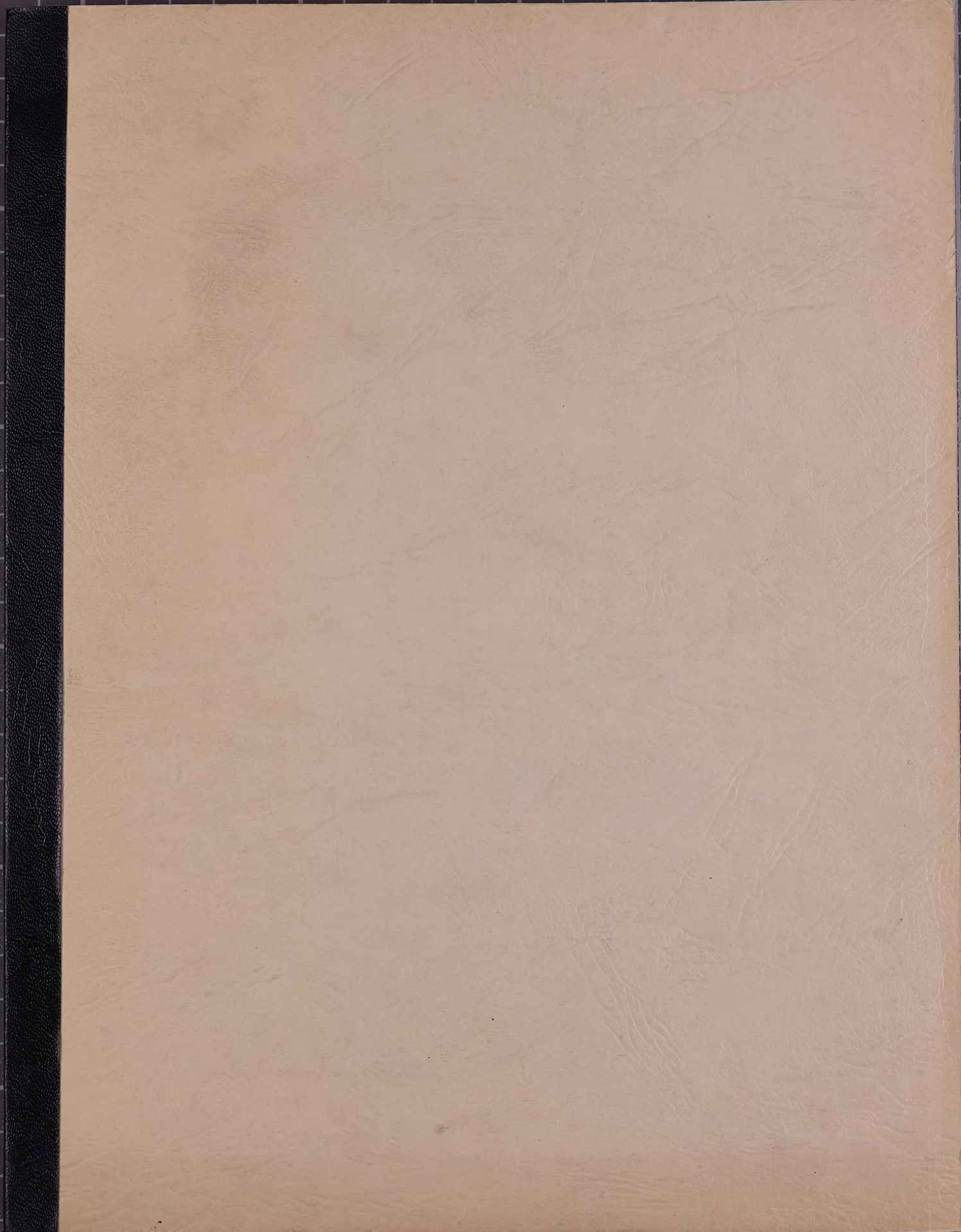


PLAN ORGANIZATION

Battelle Regional Development Project

**UNIFIED REPORT
REGION FIVE
Hamedan, Lorestan**



PLAN ORGANIZATION
Battelle Regional Development Project

UNIFIED REPORT
REGION FIVE
HAMEDAN, LORESTAN

October 11, 1972
(19 Mehr 1351)

BATTELLE MEMORIAL INSTITUTE
Columbus Laboratories
BATTELLE REGIONAL DEVELOPMENT PROJECT
Tehran, Iran

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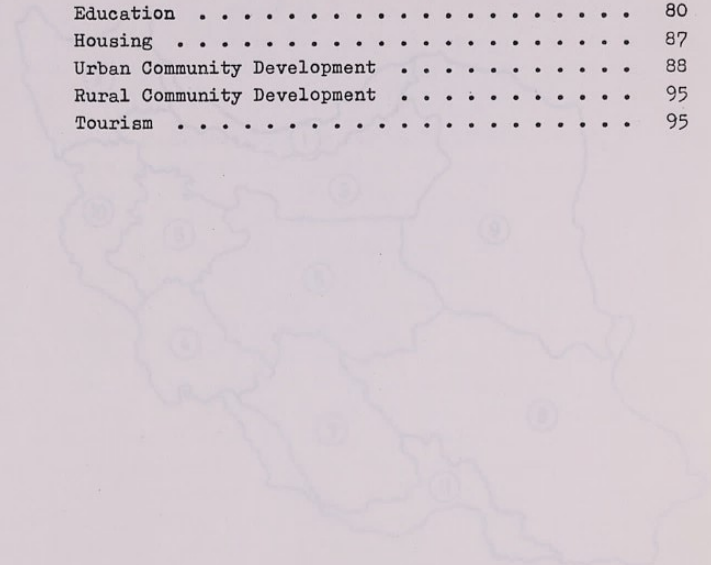
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LEGEND:

- 1. CHAHM, MAH, BAKHTIYARI, COCHIN
- 2. KERMANSHAH
- 3. KERMAN, SEMNAN, QAZVIN
- 4. MASHEHDI, ALBORBAYGI
- 5. GILAN, MAZANDARAN
- 6. SEMNAN, QAZVIN
- 7. QAZVIN
- 8. SEMNAN, BAKHTIYARI, COCHIN
- 9. KERMANSHAH
- 10. KERMAN, SEMNAN, QAZVIN
- 11. KERMANSHAH

THE 11 PLANNING REGIONS OF IRAN

برنامه‌ریزی مناطق یازده گانه ایران



LEGEND:

- 1 GILAN, MAZANDARAN, GORGAN
- 2 AZARBAYEJAN
- 3 TEHRAN, SEMNAN, ZANJAN
- 4 KHUZESTAN, KUHKILLUYEH
- 5 HAMEDAN, LORESTAN
- 6 ESFAHAN, YAZD
- 7 FARS
- 8 SISTAN, BALUCHESTAN, KERMAN
- 9 KHORASSAN
- 10 KERMANSHAHAN, KORDESTAN, ELAM
- 11 BANDAR-ABBAS, BUSHEHR

راه‌نما:

- ۱ گیلان، مازندران، گرجان
- ۲ آذربایجان
- ۳ تهران، سمنان، زنجان
- ۴ خوزستان، کیکلویه
- ۵ همدان، لورستان
- ۶ اصفهان، یزد
- ۷ فارس
- ۸ سیستان، بلوچستان، کرمان
- ۹ خراسان
- ۱۰ کرمانشاهان، کردستان، ایلام
- ۱۱ بندرعباس، بوشهر

REGIONAL DEVELOPMENT TARGETS, BUDGETS AND IMPACT

MACRO-ECONOMIC DEVELOPMENT TARGETS

The Region 5 Development Plan target is for an average annual per capita output growth of 12.3 percent during the Fifth Five Year Plan period, which is 25.1 percent above the growth with no Regional Plan. This will result in a significant narrowing of the income gap between Region 5 and the Tehran-Semnan Region.

With the implementation of the Regional Fifth Plan, all of the major producing sectors will continue to expand, reaching a total regional output of 69.66 billion rials (in 1351 prices) by 1356. This output, in value-added terms (in decreasing order with the 1351 rank in parentheses), is composed of: one, trade and commerce--20.37 billion rials (1); two, livestock products--8.85 billion rials (2); three, agricultural crops--6.79 billion rials (3); four, construction--5.42 billion rials (4); five, transportation--4.64 billion rials (5); six, social services--4.37 billion rials (6); seven, metals and metal products--4.33 billion rials (7); eight, public utilities--3.40 billion rials (8); nine, chemicals and petrochemicals--3.04 billion rials (14); ten, food processing--2.07 billion rials (10); eleven, non-metallic minerals--1.83 billion rials (9); twelve, textiles and carpets--1.70 billion rials (11); thirteen, other manufacturing--1.61 billion rials (12); fourteen, mining and quarrying--1.04 billion rials (13); and fifteen, forestry and fishing--0.20 billion rials (15).

The attainment of this output level will result in a per capita output of 23,550 rials in 1356 compared with 13,219 rials at the start of the Plan (1351). Population in the region is expected to reach a total of 2,929 million in 1356 representing an annual growth rate of 2.5 percent.

In order to achieve these output levels, a total of 76.59 billion rials (again in 1351 prices) of capital formation is required over the Plan period. This total consists of both public and

THE II PLANNING REGION OF IRAN

این منطقه در استان های...



- این منطقه در استان های...
- 1. استان تهران
 - 2. استان قزوین
 - 3. استان آذربایجان شرقی
 - 4. استان آذربایجان غربی
 - 5. استان اردبیل
 - 6. استان مازندران
 - 7. استان گیلان
 - 8. استان گلستان
 - 9. استان خراسان شمالی
 - 10. استان خراسان رضوی
 - 11. استان خراسان جنوبی
 - 12. استان اصفهان
 - 13. استان مرکزی
 - 14. استان قم
 - 15. استان همدان
 - 16. استان لرستان
 - 17. استان کرمانشاه
 - 18. استان ایلام
 - 19. استان کهگیلویه و بویراحمد
 - 20. استان بوشهر
 - 21. استان فارس
 - 22. استان چابهار
 - 23. استان هرمزگان
 - 24. استان مازندران
 - 25. استان گیلان
 - 26. استان گلستان
 - 27. استان خراسان شمالی
 - 28. استان خراسان رضوی
 - 29. استان خراسان جنوبی
 - 30. استان اصفهان
 - 31. استان مرکزی
 - 32. استان قم
 - 33. استان همدان
 - 34. استان لرستان
 - 35. استان کرمانشاه
 - 36. استان ایلام
 - 37. استان کهگیلویه و بویراحمد
 - 38. استان بوشهر
 - 39. استان فارس
 - 40. استان چابهار
 - 41. استان هرمزگان

private investment, and is broken down as follows (in descending order): public utilities--16.44 billion rials; trade and commerce--14.34 billion rials; other manufacturing--6.81 billion rials; metals and metal products--5.20 billion rials; transportation--5.25 billion rials; chemicals and petrochemicals--5.23 billion rials; livestock--5.05 billion rials; social services--4.76 billion rials; food processing--3.85 billion rials; construction--2.81 billion rials; non-metallic minerals--2.63 billion rials; agricultural crops--2.20 billion rials; textiles and carpets--1.14 billion rials; mining and quarrying--0.76 billion rials; forestry and fishing--0.10 billion rials.

In terms of complementary and supplementary government projects, the Regional Development Plan allocates a total of 11.08 billion rials for the region. This consists of 2.29 billion rials for livestock, 1.02 billion rials for agricultural crops, 0.05 billion rials for forestry and fishing, 1.78 billion rials for industry, 2.43 billion rials for transportation and 3.51 billion rials for social services. The objectives of these projects are stated in the Proposed Sectoral Programs and Projects section below.

REGIONAL PROGRAM BUDGETS AND IMPACT

The program budget presented here (Tables 1 through 8) represents the control supplementary and complementary program appropriations, as well as the additional supplementary and complementary program budgets for urban development and education.* The detailed programs outlined in the sector recommendations are incorporated in the program budgets to the extent determined by the macro-plan objectives derived from the Regional Planning Model, the results of which are presented in the Macro-Economic Development Targets section, above (see Table 2). (The program budgets shown in Table 3 were not derived from the Model). If the specific project proposals in any sector are not sufficient to use up the funds allocated to that sector in the particular region, additional programs of the same type will need to be developed to meet the required investment.

Table 1 summarizes the complementary and supplementary program budgets (both those allocated by the PPBS program and additional funds) by sector at the high, medium, and low investment levels,

*It should be noted that the regional employment and value added figures shown in the Complementary and Supplementary (C & S) industry tables do not necessarily coincide with the figures presented in the industry section of this report. This is because the Industry sector team's figures show the employment and value added that is expected to be generated by all of the industrial projects identified. The C & S Summary figures, however, include the employment and value added that is expected to be generated by the projects that fall within the budgetary constraints applicable to the region.

The rural community development investment program will provide a subsidy to the participation requirements of local villages, especially in poorer rural areas. With local villages better able to meet their subsidized (i.e., reduced) participation requirements, the national investment program for rural development proposed by Plan Organization will be implemented to a much greater extent than in previous plans. In previous plans, the lack of sufficient funds at the village level meant that often proposed projects could not be implemented because villages could not meet local participation requirements. Projects to provide access roads, drinking water, public baths, and electricity will be subsidized in those regions in which rural development subsidy programs are in effect.

and also summarizes the number of projects selected for implementation at the high budget level. Table 2 gives a summary of the high budget level impact and investment for proposed supplementary and complementary programs broken down sectorally. Table 3 shows the preliminary impact estimate for additional supplementary and complementary projects in the areas of urban community development and education. Tables 4-8 present a more detailed outline of the sectoral impact of the supplementary and complementary investments recommended under the PPBS program.

The impact of these programs in terms of direct employment, output, value added, persons benefitting, etc., is presented in the first half of each program budget. No attempt has been made to quantify the secondary benefits or to compute the multiplier effect that the recommended projects will have on the economy of the region.

Category	High Budget Level	Low Budget Level	Total
Employment (persons)	1,200	800	2,000
Output (value added)	\$1.5M	\$1.0M	\$2.5M
Persons benefitting	1,500	1,000	2,500
Investment (total)	\$2.0M	\$1.5M	\$3.5M
Investment (high budget level)	\$1.5M	\$0.5M	\$2.0M
Investment (low budget level)	\$0.5M	\$1.0M	\$1.5M

The impact of these programs in terms of direct employment, output, value added, persons benefitting, etc., is presented in the first half of each program budget. No attempt has been made to quantify the secondary benefits or to compute the multiplier effect that the recommended projects will have on the economy of the region.

SUPPLEMENTARY AND COMPLEMENTARY PROJECTS
FOR REGIONAL DEVELOPMENT (FIFTH PLAN)

REGION 5

(values in millions of 1351 rials)

Sector	Investment and High Budget Projects		No. of Projects of High Budget Levels	Investment	
	Recommended High Budget Investment	Recommended Low Budget Investment		Recommended Medium Budget Investment	Recommended Low Budget Investment
Agriculture and Animal Husbandry	3,082.0		(28)	2,653.5	2,387.5
Industry (public)	1,782.2		10	1,479.2	1,176.3
Transportation	2,427.5		11	1,727.5	1,427.5
Rural Development and Renovation	1,374.0		2,716	1,140.4	920.6
Construction and Housing	1,161.0		3	963.6	778.0
Health	777.0		2	608.5	440.0
Education (vocational and technical)	-		-	-	-
Subtotal (public sectors)	10,603.7		2,770	8,572.7	7,129.9
Industry (private)	93.1		5	93.1	93.1
Total (all sectors)	10,696.8		2,775	8,665.8	7,223.0
Urban Community Development	906.0		20	-	-
Additional Education	23.0		4	-	-
Expanded Total (all sectors)	11,625.8		2,799	8,665.8	7,223.0

^a **Agriculture:** All projects, prior to application of PPBS constraint, in the areas of crops, livestock, forestry, land tenure, research, training, extension, and marketing have been included in this column. Therefore, it is not compatible with budget levels in this table. **Industry (public):** Each PPBS project has been counted. The number of projects for the category "other projects to be determined in Phase II" has not been determined and appears a total of twelve times (one region has two categories). **Transportation:** Each PPBS project was counted. The number of projects for the category "other projects to be identified in Phase II" has not been determined (appears a total of three times). **Rural Development and Renovation:** The projects in each region where an allocation has been made to subsidize local participation requirements have been included (the 10,839 projects for the whole country include 2,831 rural road projects which total an estimated 11,324 km of rural roads). **Construction and Housing:** There are a total of 104,330 units proposed in 22 cities. Originally, the number of cities included in the supplementary and complementary housing program was 31. Due to budget constraints, the cities in Region 3 (five cities) and Region 4 (four cities) were eliminated. **Health:** The supplementary and complementary program in health is a national nutritional program; it includes pilot and full-scale programs in each region. This has been counted as a total of only 22 projects. **Education:** The supplementary and complementary program consists of one technical and vocational school in Region 2 and one in Region 8. **Industry (private):** Each proposed project was counted. **Urban Community Development:** Each city where supplementary and complementary money has been budgeted (not through PPBS) has been counted. **Additional Education:** Each proposed additional technical and vocational school is treated as one project (not through PPBS).

TABLE 2
SUMMARY OF IMPACT AND INVESTMENT FOR PROPOSED COMPLEMENTARY AND SUPPLEMENTARY PROGRAMS
REGION 5

(values in millions of rials)

Impact and Investment Sector	Impact of High Budget Investment										Investment				
	New Permanent Jobs	Temporary Jobs (man-years)	Value of Output	Value Added	Increase in Employment (man-years)	No. Families Benefitted	Km Major Roads Improved	No. Persons Affected	No. of Housing Units Proposed	Rural Development Projects Subsidized				High Budget Investment (Public sector)	Total Investment (Private sector)
										Km Access Roads	No. Drinking Water Projects	No. Public Bath Projects	No. Electrification Projects		
Agriculture and Animal Husbandry	156	1,280	1,132.7 ^a	909.8 ^a		331,416								3,082.0	
Industry (public)	1,264		6,231.0	591.8										1,782.2	
Transportation			2,427.5	1,242.2			1,583						113	2,427.5	
Rural Development and Conservation	4,164	7,366	2,870.0	2,209.9						2,824	1,237	660	113	1,374.0	
Construction and Housing		7,861	2,451.0	1,474.3				12,900						1,161.0	
Health	195		777.0	155.4			156,869							777.0	
Education (Regions 2 and 5)															
Subtotal (public sectors)	5,779	16,507	15,889.2 ^b	6,583.4 ^b		331,416	1,583	156,869	12,900	2,824	1,237	660	113	10,603.7	
Industry (Private)	389		208.4	91.9											93.1
Total (all sectors)	6,168	16,507	16,097.6 ^b	6,675.3 ^b		331,416	1,583	156,869	12,900	2,824	1,237	660	113	10,696.8	

^aAnnual increase

^bIncludes total increase in Agriculture and Animal Husbandry output and value added for the five years of the Plan period.

TABLE 4

REGION 5

SUPPLEMENTARY AND COMPLEMENTARY PROGRAM SUMMARY
(Values in millions of rials)

Program Category : Small and Medium Size Industrial Enterprises (Private Projects)

Program Objective(s): Employment Generation and Use of Local Resources

Project No. ^a	New Permanent Jobs	% of Local Resources Used (est.)	Value of Output	Value Added	Priority Rating	Total Investment
107	248	100	92.1	60.5	AA	49.7
108	70	100	42.0	9.4	AA	16.4
109	6	100	6.0	1.9	AA	1.9
110	60	80	60.0	17.1	AA	21.4
113	5	80	8.3	3.0	BA	3.7
TOTAL	389		208.4	91.9		93.1

^aThe specific industrial projects (and their locations) that are associated with the project numbers shown here can be found in the industrial section of this Regional Report (Table 1A, p. 19, for the private sector projects, and Table 1B, p. 20, for the Government projects).

TABLE 5

REGION 5

SUPPLEMENTARY AND COMPLEMENTARY PROGRAM SUMMARY

(Values in millions of riels)

Program Category : Small and Medium Size Industrial and Agro-Industrial Enterprises (Government Projects)

Program Objective(s): Employment Generation and Utilization of Local Resources

Project No.	New Permanent Jobs	% of Local Resources Used	Value of Output	Value Added	Priority Rating	High Budget Investment	Fifth Plan Budget Allocation (By Year)					Medium Budget	Low Budget
							1	2	3	4	5		
115	25	100	20.9	17.6	AA	109.0		21.8	54.5	32.7		109.0	109.0
116	12	100	5.5	4.4	BA	15.0		15.0				15.0	15.0
117	12	100	5.5	4.4	BA	15.0		15.0				15.0	15.0
118	225	100	2,161.8	161.1	AA	440.5		88.1	264.5	88.1		440.5	440.5
119	180	100	1,625.4	120.6	AA	344.5			68.9	206.7	68.9	344.5	344.5
120	130	100	1,083.6	79.8	AA	241.4				120.7	120.7	241.4	241.4
121	6	100	1.5	1.1	AA	5.0						5.0	5.0
123	8	100	8.1	6.8	BB	23.0		11.5				11.5	11.5
124	8	100	8.1	6.8	BB	23.0		11.5				11.5	11.5
125	8	100	8.1	6.8	BB	23.0		11.5				11.5	11.5

TABLE 5 (Continued)

REGION 5

SUPPLEMENTARY AND COMPLEMENTARY PROGRAM SUMMARY

(Values in millions of riels)

Program Category : Small and Medium Size Industrial and Agro-industrial Enterprises (Government Projects)

Program Objective(s): Employment Generation and Utilization of Local Resources

Project No.	New Permanent Jobs	% of Local Resources Used	Value of Output	Value Added	Priority Rating	High Budget Investment	Fifth Plan Budget Allocation					Medium Budget	Low Budget	
							1	2	3	4	5			
Other	650		1,302.7	182.4		542.8		108.6	108.6	108.6	162.8	162.8	345.8	40.8
TOTAL	1,264		6,231.0	591.8		1,782.2		288.0	496.3	611.0	352.4	1,479.2	1,176.3	

TABLE 6

REGION 5 - HAMEDAN, LORESTAN
 SUPPLEMENTARY AND COMPLEMENTARY PROGRAM SUMMARY
 (Values in millions of rials)

Program Category : Agriculture
 Program Objective(s): Increase Production; Reduce Regional Disparities in Agricultural Services; Re-locate Farmers From Marginal Holdings

Program	Program Impact	Employment			Annual Increase			No. of Farm Families Benefitted
		Increase (man years)	New Permanent Jobs	Temporary Jobs	Volume of Output (000 H.P.)	Value of Output	Value Added	
A. Crop Production								
Wheat					16	90.6	400.1	
Sugar Beet					9	80.1		
Grapes					12	216.0		
Kitchen Crops					14	84.0		
B. Livestock and Livestock Products							509.7	
Meat					5	390.0		
Milk					23	230.0		
Wool					.6	42.0		
C. Extension, Training, Research								
Adaptive Research								
Training Programs (98 persons)								
Expansion of Extension Services								
D. Marketing								
Training of Coop Managers								
Total A-B-C-D								313,016
E. Land Tenure Program								
Total A-B-C-D-E		16,470	156	1,280		1,152.7		313,016 18,400 331,416

TABLE 6 (Continued)

REGION 5 - HAMEDAN, LORESPAN

SUPPLEMENTARY AND COMPLEMENTARY PROGRAM SUMMARY
(Values in millions of rials)

Program Category: Agriculture (Continued)

Program	Program Budget	High Budget Investment	Fifth Plan Budget Allocation (by year)					Medium Budget	Low Budget
			1	2	3	4	5		
A. Crop Production									
Wheat		6.0					3.0	1.5	
Sugar Beet		4.0					3.0	2.0	
Grapes		22.5					15.0	-	
Kitchen Crops		-					-	-	
Livestock and Livestock Products		797.0					456.0	284.0	
B. Livestock and Livestock Products									
C. Extension, Training, Research									
Adaptive Research		115.0					95.0	75.0	
Training Programs		37.5					31.5	25.0	
Expansion of Extension Services		225.0					185.0	150.0	
D. Marketing									
Training of Coop Managers		75.0					65.0	50.0	
Total A-B-C-D		1,282.0	128.2	256.4	256.4	320.5	853.5	587.5	
E. Land Tenure Program		1,800.0	180.0	360.0	360.0	450.0	1,800.0	1,800.0	
Total A-B-C-D-E		3,082.0	308.2	616.4	616.4	770.5	2,653.5	2,387.5	

TABLE 7
REGION 5
SUPPLEMENTARY AND COMPLEMENTARY PROGRAM SUMMARY
(Values in millions of rials)

Road Project No. a	Roads Improved (kms)	% of Local Resources Used	Benefit-Cost Ratio	Value of:		Investment		
				Output	Value Added	High Budget	Medium Budget	Low Budget
62	58	100	5			72.5	72.50	72.5
63	44	100	4.5			55.0	55.0	55.0
64	63	100	3.9			126.6	126.6	126.6
65	49	100	2.7			44.6	44.6	44.6
66	29	100	2.0			26.4	26.4	26.4
67	44	100	1.06			40.0	40.0	40.0
68	27	100	1.0			14.0	14.0	14.0
69	29	100	.97			15.1	15.1	15.1
70	42	100	.92			38.2	38.2	38.2
71	47	100	.90			32.9	32.9	32.9
72	42	100	.90			37.0	37.0	37.0
OTHER	1,080			1,925.1	Distribution by projects not available	1,925.1	1,225.1	925.1
TOTAL	1,583	100		2,427.5	1,242.2	2,427.5	1,727.5	1,427.5

Program Category : Transportation
Program Objectives: Improve Accessibility to Regional Poles (within Regions) and to Other Regions; Reduce Road Transportation Costs

a. The specific transportation projects (and their locations) that are associated with the project numbers shown here can be found in the transportation section of this Regional Report (Table 4, pp. 71-72).

TABLE 8
 REGION 5 - HAMEDAN, LORESTAN
 SUPPLEMENTARY AND COMPLEMENTARY PROGRAM SUMMARY
 (Values in millions of rials)

Program Category : Social Services
 Program Objectives : Reduce Regional Disparities in Social Services; Help
 Poorer Regions to Meet Participation Requirements (20%)
 for Public Projects; Improve Housing of Low Income
 Groups; Raise Nutrition Levels

Impact Programs	Employment		% of Local Resources Used	Value of:		No. of Housing Units Proposed	No. of Projects Proposed	No. of Persons Affected
	New Permanent Jobs	Temporary Jobs (ann-years)		Output	Value Added			
A. Housing Interest Subsidies								
Land Acquisition								
Total		7,861	80	2,451.0	1,474.3	12,900	3	
B. Rural Community Development								
Access Roads							706	
Drinking Water							1,237	
Public Baths							660	
Rural Electrification							113	
Unit Cost Subsidies								
Total	4,164	7,366	70	2,870.0	2,209.9		2,716	
C. Nutrition								
Pilot Project								
Regional Projects	195		100	777.0	155.4		2	156,869
Total	4,359	15,227		6,098.0	3,639.6	12,900	2,724 ^a	156,869
Regional Totals								

^aThe number of projects whose village participation requirements have been subsidized.

REGIONAL DEVELOPMENT INDICATORS

REGIONAL ECONOMIC ACCOUNTS

The Regional Economic Accounts project the output and expenditures for 1356 under the Fifth National Plan, which consists of implied Plan Organization Fifth Plan targets. The results of implementing the Regional Fifth Plan are described in the section on Macro-Economic Development Targets, above. The following outlines, on the other hand, the results of implementing the Fifth National Plan (see Tables 1 and 2).

This region is agricultural in nature and, with its good grazing areas and growing of fodder, is among the leading producers of livestock (primarily sheep in the Lorestan area). During the Plan period it is expected to account for over 9 percent of total national value added in this sector. In 1351 agriculture will contribute about 32 percent of the region's total output, with a total value added in production of 11 billion rials. This is projected to increase at about the national average rate.

Farm products include high quality wheat, barley, sugar beets, alfalfa, vegetables, grapes, fruits and nuts. Agriculture related industries include flour and sugar milling, the processing of fruit and nuts, and wool processing to supply the carpet industry of the region. The regional accounts feature the development of heavy industry in the Arak area and the accompanying expansion of power generating facilities. With the establishment and expansion of the aluminum plant, lead smelting, and the manufacture of farm equipment, electronic equipment and machinery, metal and metal products production will become the most important within the manufacturing and mining sector, accounting for 28 percent of the region's industrial output in 1351. This is projected to grow at an annual rate of 26 percent during the Plan period. The production of non-metallic mineral products, including brick, cement, building stone and ceramic handicrafts, places this sector second in regional industrial importance and stimulates corresponding expansion in the

TABLE 1

GROSS REGIONAL PRODUCT AT FACTOR COST

REGION 5 - HAMEDAN, LORESTAN

Sector	GRP at 1351 Prices (billions of rials)		Sector as % of Regional Total		Region as % of National Total	
	1351	1356	1351	1356	1351	1356
<u>Agriculture</u>	10.92	14.23	31.6	25.8	6.2	6.2
Livestock Products	6.85	9.10	19.8	16.5	9.4	9.4
Field and Orchard Crops	4.04	5.05	11.7	9.2	4.1	4.0
Forestry and Fishing	.04	.08	.1	.1	.9	1.5
<u>Construction</u>	2.97	4.68	8.6	8.5	5.6	5.2
<u>Manufacturing and Mining</u>	3.78	7.83	11.0	14.2	2.1	2.3
Mining and Quarrying	.48	1.00	1.4	1.8	5.6	6.4
Food Products	.52	.68	1.5	1.2	1.7	1.6
Metal Products	1.04	3.36	3.0	6.1	4.0	5.6
Chemical Products	.09	.21	.3	.4	.2	.2
Mineral Products	.82	1.47	2.4	2.7	5.4	5.3
Textile Products	.43	.54	1.2	1.0	1.2	1.0
Other Manufacturing	.40	.57	1.2	1.0	2.0	1.5
<u>Transportation</u>	2.40	3.29	7.0	6.0	6.1	5.8
<u>Utilities and Communication</u>	1.03	2.59	3.0	4.7	3.6	4.6
<u>Trade and Commerce</u>	7.89	12.92	22.8	23.4	3.7	3.8
Trades	2.14	3.25	6.2	5.9	2.8	3.1
Banking and Insurance	1.85	3.51	5.4	6.4	3.5	3.7
Housing	2.02	3.60	5.8	6.5	4.0	3.9
Services	1.88	2.56	5.4	4.6	6.0	5.4
<u>Social Services</u>	2.49	3.95	7.2	7.2	6.6	6.5
<u>General Government</u>	3.05	5.61	8.8	10.2	3.3	3.6
<u>Total</u>	34.53	55.10	100.0	100.0	3.1	2.9

TABLE 2
REGIONAL EXPENDITURE AND PRODUCT ACCOUNTS
REGION 5 - HAMEDAN, LORESTAN

Account Item	Regional Total (billions of 1351 rials)		Per Capita (thousands of 1351 rials)		Increase Per Capita Total 1356/1351	Region Share of Total Iran 1351	1356
	1351	1356	1351	1356			
Consumption Expenditures	45.11	66.79	17.31	22.64	30.8	5.6	5.3
Private	36.16	50.29	13.88	17.05	22.8	6.0	5.6
Urban	10.63	16.83	(15.32)	(18.70)	22.1	3.0	2.9
Rural	25.53	33.46	(13.55)	(16.33)	22.3	10.1	10.5
Public	8.95	16.50	3.43	5.59	63.0	4.4	4.4
Capital Formation	10.06	17.67	3.86	5.99	55.2	3.9	3.8
Regional Share of (X-M) Bal.	-17.20	-22.68	-6.60	-7.69	-	-	-
GRP at Market Prices	37.97	61.78	14.57	20.95	43.8	3.2	3.0
Indirect Taxes	-3.44	-6.68	-1.32	2.27	72.0	3.7	3.6
GRP at Factor Cost	34.53	55.10	13.25	18.68	41.0	3.1	2.9
Population (millions)	2.606	2.949	-	-	13.2	8.4	8.2
Urban	.694	.900	-	-	29.7	5.2	5.3
Rural	1.912	2.049	-	-	7.2	10.7	10.8

mining and quarrying sector, projected to double in output between 1351 and 1356. Other important products of the region include lumber, furniture and clothing manufactures. Industrial activities of the region will generate a higher than national average growth in the trade and commerce.

Growth rates for economic sectors of the region are estimated as follows: agriculture - 5.4 percent; construction - 9.6 percent; manufacturing and mining - 15.7 percent; transportation - 6.5 percent; utilities and communications - over 20 percent; trade and commerce - 10.4 percent; social services - 9.7 percent; and general government - 13.0 percent. The expected over-all growth rate of about 10 percent will be below the national average, due primarily to the relatively slow growth in construction, transportation and agriculture.

Growth in industry will tend to shift the region, to some extent, away from its characteristically agricultural nature. The regional accounts indicate that agriculture will fall in importance from 32 percent to 26 percent between 1351 and 1356, while manufacturing and mining will increase from 11 percent to 14 percent.

The region contributes only about 3 percent of the national gross domestic product. During the Plan period, its less-than-average growth rate will hold its over-all contribution to the national economy at about this level. However, it shares 6 percent of total national personal consumption expenditures and is at an intermediate level of economic prosperity. Per capita private expenditures in 1351 are estimated at over 15,000 rials in the urban sector and over 13,000 rials in the rural sector. Urban and rural expenditure levels are expected to advance at the same rate between 1351 and 1356 (4 percent annually) indicating that farm and city households will share equally the fruits of economic progress in the region.

As in other predominantly agricultural regions, per capita public consumption expenditures are relatively low: 3,400 rials

TABLE 2 - PROJECTED ECONOMIC GROWTH RATES FOR THE REGION

Year	Agriculture	Manufacturing and Mining	Construction	Transportation	Utilities and Communications	Trade and Commerce	Social Services	General Government	Overall
1351	5.4	15.7	9.6	6.5	20.0	10.4	9.7	13.0	10.0
1356	5.4	15.7	9.6	6.5	20.0	10.4	9.7	13.0	10.0

in 1351 compared with the national average of 6,500 rials. Government purchases of goods and services, therefore, do not contribute substantially to the total consumption expenditure level of the region.

Input/Output tables have been constructed for Region 5 (Hamedan, Lorestan). A summary of the results as they compare to other regions is presented in Tables 1 through 4 in the Regional Input/Output Analysis section of the Regional Development Plan Framework.

PROPOSED SECTORAL PROGRAMS AND PROJECTS FOR REGION 5

COMPLEMENTARY AND SUPPLEMENTARY PROJECTS

Industry (Including Agro-Industry) and Mining

1. Policy and Priority Recommendations

Region 5, with the exception of the city of Arak, is primarily an agricultural area. Hamedan and eastern Lorestan are important wheat growing areas and western Lorestan is an important livestock area. Sugar beets, potatoes, onions and fodder are important crops. Industries that will use these agricultural products are ones that will aid the local population most directly. In addition, since Arak has been made an industrial pole by the establishment of an aluminum smelter, a machine factory, and a tractor assembly plant, supporting metal working industries and fabrication plants should be developed. Table 1A and 1B show the project priorities for the private sector and the Government sector and Tables A and B show the annual energy requirements for these projects. The projects are detailed in the following sections.

2. Project Identification

Agro-Industries

Pasta products factory. The area already has flour mills, and other industries utilizing wheat should be developed. Since Hamedan produces wheat that is especially suited to making macaroni, spaghetti, and noodles, a pasta products plant should be established in Hamedan to serve both southwestern Iran and Tehran. A plant with a capacity of 500 metric tons per year would be of economic size (total national production is about 5,000 metric tons per year). The total investment, exclusive of land, would require 1.9 million rials (fixed plus working capital) and employ 6 laborers (see Appendix A, Table I). The return on capital will be about 65 percent per annum.

Onion powder and dehydrated vegetables plant. Region 5 has a large production of potatoes and onions, as well as other kitchen

TABLE 1B
GOVERNMENT PROJECTS^a

No.	Project	Location	Investment ('000 Rls.)	Employment	Capital Intensity ('000 Rls.)	Contribution Linkage Grade	Combined Grade	Type of Year of Investment- Expenditure
115	I Industrial Estate	Arak	109,000	25	-	A	AA	1355-54
116	I Industrial Estate	Hamedan	15,000	-	-	B	BA	1355
117	I Industrial Estate	Borujerd	15,000	-	-	B	BA	1355
118	I Slaughterhouse	Khorramabad	440,480	225	1960	A	AA	1355-54-55
119	I Slaughterhouse	Hamedan	244,500	180	1910	A	AA	1355-54-55
120	I Slaughterhouse	Arak	241,428	130	1860	A	AA	1355-54-55
121	I Ceramics Inst.	Hamedan	5,000	6	833	A	AA	1355
122	I Aid to Textiles	Hamedan	-	-	-	A	AA	-
123	II Cold Storage	Borujerd	23,000	8	2875	B	BB	1355
124	II Cold Storage	Hamedan	23,000	8	2875	B	BB	1355
125	II Cold Storage	Arak	23,000	8	2875	B	BB	1355
	Total		1,239,408	590				

^aPriority levels for the Government sector (G) are graded according to their contribution to regional and national economies and their backward and forward linkage potentials. The three levels of priorities are: I (AA), II (AB, BA), III (BB), with A for high linkage or contribution, and B for medium or low linkage or contribution.

TABLE A
REGION 5
ANNUAL ENERGY REQUIREMENTS FOR INDUSTRIAL PROJECTS (PRIVATE SECTOR)

Project No.	Electricity (kwhr)	Gas, Oil (liters)	Fuel Oil (liters)	Coal (metric tons)	Coke (metric tons)	Other
107		232,500	1,800,000			
108	144,000	54,000				
109	50,000					
110	70,000		30,000			
111*						
112	35,000					
113						
114*						
TOTAL	299,000	286,500	1,830,000			

*Not specified in sufficient detail to calculate energy requirements.

Table B (continued) - Industrial projects for which energy requirements are specified.

Project No.	Electricity (kwhr)	Gas, Oil (liters)	Fuel Oil (liters)	Coal (metric tons)	Coke (metric tons)	Other
115	1,500,000					
116	210,000					
117	210,000					
118	5,200,000		1,940,000			
119	3,900,000		1,450,000			
120	2,600,000		970,000			
121	4,000		30,000			
122*	200,000					
123	200,000					
124	200,000					
125	200,000					
TOTAL	14,224,000		4,390,000			

TABLE B
REGION 5
ANNUAL ENERGY REQUIREMENTS FOR INDUSTRIAL PROJECTS (GOVERNMENT)

1959-60
1960-61

*Not specified in sufficient detail to calculate energy requirements.

vegetables. A plant to produce onion powder, garlic powder, dehydrated potatoes and other dehydrated vegetables would be profitable and provide a market for lower quality vegetables than cannot be sold as fresh vegetables. In addition, a reduction of imports of garlic powder, etc., will produce more value-added in Iran. A plant to produce annually 585 tons of dried onions and 685 tons of other dehydrated vegetables would require an investment of about 50 million rials (see Appendix A, Table II). This plant would provide seasonal employment for 248 people. Malayer is a good location for this plant.

Grape juice canning plant. Region 5 has a large grape production and would profit from a plant to produce grape juice (as well as other grape products described elsewhere). A plant capable of producing 2 million liters per year of grape juice would require an investment (fixed and working capital) of about 21.4 million rials. The return on investment would be 45 percent and employment for 15 would be created. Details are given in Appendix A, Table III. The plant should be located near Malayer, Borujerd, or Arak.

Raisin packing plant. Malayer and Tuyserkan in farmandari-kol Hamedan are at the center of a raisin and nut raising area. Recently packing plants were consolidated. However, there is a need for one or two large raisin packaging plants to ensure a high quality product, especially for export. A plant to pack 3 million sun-dried raisins per year would require working and fixed capital of 16.4 million rials and would return 39.7 percent on investment. Total labor would be 70 workers. Details are given in Appendix A, Table IV.

Wine and vodka. The Government has made plans to close many of the small, inefficient distilleries and expand about 10 others. Malayer's vodka is of high quality, and many grapes are found in the vicinity. Thus it would make sense to choose this plant to be one of those to be expanded. A detailed study would be required to estimate actual investment costs and return since

Region	Investment (Million Rials)	Working Capital (Million Rials)	Total Investment (Million Rials)	Return on Investment (%)	Employment (Number of Workers)
1	100	50	150	45	15
2	200	100	300	39.7	70
3	300	150	450	45	15
4	400	200	600	45	15
5	500	250	750	45	15
6	600	300	900	45	15
7	700	350	1050	45	15
8	800	400	1200	45	15
9	900	450	1350	45	15
10	1000	500	1500	45	15

some of the facilities now in place undoubtedly could be used.

Slaughterhouses. Region 5 is an important livestock producing area (about 8 percent of the 1356 national total) with small local consumption (see Table 2). Several large slaughterhouses should be located in the region to kill and ship chilled or frozen carcasses to consuming regions. Khorramabad is the pole for the most important area and should have a facility with a capacity of 20,000 tons per year. Hamedan is second in meat potential and requires a plant of 15,000 metric tons per year. The animals in the vicinity of Arak, although about the same number as in the vicinity of Hamedan, have a lower average carcass weight. A 10,000 metric tons per year facility is recommended for Arak. These plans are summarized in Table 3 and details are in Appendix A, Tables VI and VII.

Each of these slaughterhouses will have facilities for by-product processing and cold storage units. The suggested plant sites are centrally located on good roads relative to local population, which will be served by refrigerated or insulated trucks. The current "non-major" facilities (which are outmoded) should be shut down as soon as the new facilities begin operation.

TABLE 2
MEAT PRODUCTION POTENTIAL, 1356

	<u>Thousand Metric Tons</u>
1. Red meat potential, 1356	29
2. Rural consumption	21
3. Urban consumption	20
4. Available for slaughterhouses (1 - rural consumption)	8
5. Needed capacity (4 - major slaughterhouse capacity)	4
6. Recommended new facilities ^a	45

^aRecommended facilities include capacity to slaughter animals from Regions 4, 6, 10 and part of 3 during seasonal migrations.

TABLE 3
RECOMMENDED SLAUGHTERHOUSES

Location	Daily Sheep/Cattle	Yearly (tons)	Capital Investment (millions of rls)	Return on Investment	Workers
Khorramabad	2,400/240	20,000	440	28%	225
Hamedan	1,800/180	15,000	345	26%	180
Arak	1,200/120	10,000	241	24%	130

Textiles and Carpets

Carpet making, especially at the handicraft level, is very important as a source of cash income for people in the lower income brackets. In addition, it is an important export item. For these reasons, government financial and technical support is recommended. These problems are not unique to Region 5, but are clearly visible there. Hamedan is an important center for manufacture of carpets for export, yet has a reputation for the use of low quality dyes. Advice on the best kinds of dye and methods of dying would be of help. The wool scouring and carpet yarn spinning mill in Hamedan is in deep financial trouble. Its failure would be a blow to home carpet workers and the small organized workshops. No exact figure can be put on the financial investment required, but it would indirectly aid local small industry and handicraft as well as local woolgrowers. The same can be said for carpet making centers all over Iran. The Iran Carpet Company should expand its activities to fill the needs outlined above.

Mining

Much small scale mining potential exists in Region 5, but its benefit to the region (either on an absolute or a relative basis) are so minimal as to not be worth analysis here.

Industrial Estates

Arak. During the Fourth Plan, large scale industry was established in Arak, including an aluminum smelter, a machine

manufacturing factory, and a tractor assembly plant. There is now need for supporting industry. This includes small scale specialty foundries, machine repair shops, and repair parts fabrication shops. In addition, there is the opportunity for forward linkage industries, such as manufacture of aluminum architectural shapes (door and window casings, etc.). Both the supporting industries and the user industries should be close to the large industrial plants in an industrial park.

A large industrial estate modeled on the one in Ahvaz would be quite useful. Here about 24 workshops and some common supporting activities would be located on a common site. The investment would be about 109 million rials, and would break even when about two-thirds were occupied. When full, it would return about 4 percent on the investment, excluding land cost. Approximately 794 workers would use facilities involving about 109 million rials government investment and 159 million rials private investment. Details on the government investment are given in Appendix A, Table VIII. Typical tenant calculations are shown in Appendix A, Table IX (for an aluminum architectural specialties workshop).

Hamedan and Borujerd. Small industrial estates with perhaps 2000 m² covered space and an investment of 15 million rials are desirable. Small mechanically oriented industries sharing a common workshop could be established. Examples of industries are kerosene stove making, pump and agricultural equipment repair, cutlery manufacture, manufacture of hand agricultural implements and bicycle parts.

Cement

The cement plant at Dorud has expanded rapidly in recent years and probably will continue to do so. No estimate of the likely volume or cost of this expansion is possible since the financial figures of this company are confidential.

Ceramics

Hamedan is famous for its hand made pottery, produced in small workshops. Expansion of the industry capitalizing on the current skills is desirable. The establishment of a ceramics institute in Hamedan would do much to solve industry problems, train new workers, and, perhaps, train managers for larger scale pottery factories. An institute for 60 students with 3 classrooms and 2 workshops would require an investment of 5 million rials, and operating expenses of 2.5 million rials per year, with a staff consisting of a director, a supervisor, and four teachers.

Leather Goods

The leather factory in Hamedan, the oldest in Iran, recently went bankrupt, throwing about 200 skilled workers out of jobs. If the integrated slaughterhouse (2400 sheep, 240 cattle) is established as recommended (to include facilities for processing by-products), the presence of a local source of hides will permit reopening of the old factory or the establishment of a new, modern one.

Cold Storage

Hamedan, eastern Lorestan and the shahrestans of Markazi ostan in Region 5 have very high fruit production. There would be great regional benefit in having cold storage for fruit that would in effect extend the season. In Hamedan, in particular, this could help overcome the disadvantage of its climate. The cool spring causes late ripening of the fruit crops so that they reach the market when it is already flooded with produce from areas that harvest earlier. Cold storage would help to stretch out the late crop from Hamedan into the period when less is available from elsewhere to the advantage of local consumers. Cold storage units should be constructed in Hamedan, Borujerd and Arak. The cost of investment in each cold storage facility

(with 2,000 metric tons capacity) is estimated to be about 30 million rials, and will employ about 10 persons full time. It is estimated that, should each plant, on the average, work full capacity (2,000 MT) for only four months of the year, and for the remaining eight months work only at one fourth capacity, each would earn at 0.04 rials/kg/day or about 22.5 million rials annually. The annual operating cost for each such plant is estimated to be about 8.5 million rials per year. Therefore, the annual return on investment in this cold storage facility is estimated to be about 20 percent per year. Of course, if one considers the money saved by the local people due to correct storing methods, the benefit/cost ratio for this project will be quite high. Considering the relatively low rate of return on the capital investment it is unlikely that the private sector would be willing to invest in this project and, therefore, it should be implemented by the public sector.

APPENDIX A
TABLE I

PROFITABILITY CALCULATIONS FOR A
PASTA PLANT IN HAMEDAN

<u>Investment</u>	
Machinery and Equipment	<u>Rials</u> 780,000
Buildings, etc.	602,000
Total	<u>1,382,000</u>
Working Capital	<u>480,000</u>
Total Cost	1,862,000
<u>Annual Cost</u>	
Wages	321,000
Raw Material	3,250,000
Fuel/Power/Water/Packing/Maintenance	1,069,000
Depreciation	110,000
Contingency	<u>32,000</u>
Total Annual Cost	4,782,000
<u>Sales (Revenue)</u>	6,000,000
<u>Profit (Benefit)</u>	1,218,000
<u>Profitability</u>	65%
<u>Labor</u>	6 employees

APPENDIX A

TABLE II

PROFITABILITY CALCULATIONS FOR A
ONION POWDER AND DEHYDRATED VEGETABLE PLANT

<u>Investment</u>	<u>Rials</u>
Machinery and Equipment	27,260,000
Buildings, etc.	<u>7,690,000</u>
Total	34,950,000
Working Capital	<u>14,732,000</u>
Total Cost	49,682,000
<u>Annual Costs</u>	
Wages	22,320,000
Raw Materials	26,370,000
Fuel/Power/Water/Packing/Maintenance	5,805,000
Depreciation	3,111,000
Contingency	<u>1,178,000</u>
Total Annual Cost	58,784,000
<u>Sales^a (Revenue)</u>	92,081,000
<u>Profit (Benefit)</u>	33,297,000
<u>Profitability</u>	67%
<u>Labor</u>	248 employees

^a Dried Onions 90 Rls/kg* x 585 tons
 Other Dried Vegetables 72.5 x 685 tons
 (*10% for distribution)

APPENDIX A
TABLE III

PROFITABILITY CALCULATIONS FOR A
GRAPE JUICE PLANT

	<u>Rials</u>
<u>Investment</u>	
Machinery and Equipment	8,040,000
Buildings, etc.	<u>2,670,000</u>
Total	10,710,000
Working Capital (2 mo. labor, 3 mo. supplies)	<u>10,725,000</u>
Total Cost	21,435,000
<u>Annual Costs</u>	
Wages 15 x 300 x 300	1,350,000
Raw Materials 3000 tons 8 Rls/kg	24,000,000
Fuel/Power/Water/Packing/Maintenance (incl. cans @ 9 Rls/liter)	23,000,000
Depreciation	938,000
Contingency	<u>858,000</u>
Total Annual Cost	50,191,000
Sales (Revenue) (2 million liters @ 30 Rls)	60,000,000
Profit (Benefit)	9,809,000
<u>Profitability</u>	45%
<u>Labor</u>	15 employees

APPENDIX A
TABLE IVPROFITABILITY CALCULATIONS FOR A
RAISIN PACKAGING PLANT
(based on raisins only)

	<u>Rials</u>
<u>Investment</u>	
Machinery and Equipment	900,000
Buildings, etc.	<u>10,000,000</u>
Total	10,900,000
Working Capital	<u>5,500,000</u>
Total Cost	16,400,000
<u>Annual Costs</u>	
Wages	1,200,000
Raw Materials ^a	30,000,000
Fuel/Power/Water/Packing/Maintenance	2,600,000
Depreciation	590,000
Contingency	<u>1,090,000</u>
Total Annual Costs	35,480,000
<u>Sales^b (Revenue)</u>	42,000,000
<u>Profits (Benefit)</u>	6,520,000
<u>Profitability</u>	39.7%
<u>Labor</u>	70 employees

^aPurchase of raw materials at 10 rials per kg.^bSale price at 14 Rls/kg.

APPENDIX A
TABLE V

PROFITABILITY CALCULATIONS FOR A
SLAUGHTERHOUSE IN LORESTAN
(20,000 Metric Tons/Year, or
2400 sheep and 240 cattle daily)

	<u>Rials</u>
<u>Investment</u>	
Machinery and Equipment	113,250,000
Buildings, etc.	<u>160,500,000</u>
Total	273,750,000
Working Capital (2 mo. labor, 1 mo. animals)	<u>166,730,000</u>
Total Cost	440,480,000
<u>Annual Costs</u>	
Wages	10,116,000
Raw Materials	1,981,700,000
Fuel/Power/Water/Packing/Maintenance	15,405,000
Depreciation	19,883,000
Contingency	<u>13,338,000</u>
Total Annual Cost	2,040,442,000
<u>Sales (Revenue)</u>	2,161,782,000
<u>Profit (Benefit)</u>	121,340,000
<u>Profitability</u>	27.5%
<u>Labor</u>	225 employees

APPENDIX A
TABLE VI

PROFITABILITY CALCULATION FOR A
SLAUGHTERHOUSE IN HAMEDAN
(15,000 Metric Tons/Year or
1800 sheep and 180 cattle per day

	<u>Rials</u>
<u>Investment</u>	
Machinery and Equipment	90,600,000
Buildings, etc.	<u>128,400,000</u>
Total	219,000,000
Working Capital (2 mo. labor, 1 mo. animals)	<u>125,500,000</u>
Total Cost	344,500,000
<u>Annual Costs</u>	8,093,000
Wages	1,490,000,000
Raw Materials	12,324,000
Fuel/Power/Water/Packing/Maintenance	15,906,000
Depreciation	<u>9,937,000</u>
Contingency	1,536,260,000
Total Annual Cost	1,625,400,000
<u>Sales (Revenue)</u>	89,140,000
<u>Profit (Benefit)</u>	
<u>Profitability</u>	25.8%
<u>Labor</u>	180 employees

APPENDIX A
TABLE VII

PROFITABILITY CALCULATIONS FOR A
SLAUGHTERHOUSE IN ARAK
(10,000 Metric Tons/Year, or
1200 sheep and 240 cattle daily)

	<u>Rials</u>
<u>Investment</u>	
Machinery and Equipment	65,232,000
Buildings, etc.	92,448,000
Total	<u>157,680,000</u>
Working Capital	<u>83,748,000</u>
Total Cost	241,428,000
<u>Annual Costs</u>	5,827,000
Wages	993,333,000
Raw Materials	8,873,000
Fuel/Power/Water/Packing/Maintenance	11,452,000
Depreciation	<u>6,700,000</u>
Contingency	1,026,185,000
Total Annual Cost	1,083,600,000
<u>Sales (Revenue)</u>	57,415,000
<u>Profit (Benefit)</u>	
<u>Profitability</u>	23.8%
<u>Labor</u>	130 employees

APPENDIX A
TABLE VIII

PROFITABILITY CALCULATIONS FOR AN
INDUSTRIAL ESTATE IN ARAK (AHVAZ MODEL)
(without business plans for central machinshop)

	<u>Rials</u>
<u>Investment</u>	9,000,000
Machinery and Equipment	<u>100,000,000</u>
Buildings, etc.	109,000,000
Total	209,000,000
<u>Annual Costs</u>	2,250,000
Wages	2,500,000
Fuel/Power/Water/Packing/Maintenance	<u>5,900,000</u>
Depreciation	10,650,000
Total Annual Cost	20,000,000
<u>Sales^a (Revenue)</u>	5,130,000
Charges for services	<u>5,920,000</u>
Rent @ 180 Rls/m ²	11,050,000
Total	22,100,000
<u>Profitability</u>	4%
<u>Labor</u>	25 employees
^a Rent 180 rials/m ² /yr	
8 workshops 270 m ² covered, 270 m ² yard	
8 workshops 492 m ² covered, 492 m ² yard	
8 workshops 1,290 m ² covered, 1,290 m ² yard	

APPENDIX A
TABLE IX

PROFITABILITY CALCULATIONS FOR
ALUMINUM PRODUCTS
2500 UNITS
PRECUT ALUMINUM ARCHITECTURAL PRODUCTS

	<u>Rials</u>
<u>Investment</u>	
Machinery and Equipment US x 1.5	1,600,000
Buildings, etc.	<u>720,000</u>
Total	2,320,000
Working Capital (3 mo. supply, 2 mo. labor)	<u>1,350,000</u>
Total Cost	3,670,000
<u>Annual Costs</u>	450,000
Wages	5,100,000
Raw Materials US x 1.5	60,000
Fuel/Power/Water/Packing/Maintenance	196,000
Depreciation (160,000 + 36,000)	108,000
Contingency	<u>100,000</u>
Rent (555 m ² @ 180/m ²)	6,014,000
Total Annual Cost	8,250,000
<u>Sales (Revenue)</u>	2,235,000
<u>Profit (Benefit)</u>	
<u>Profitability</u>	61%
<u>Labor</u>	5 employees

Agriculture

1. Introduction

This section describes a strategy, programs, and projects which could achieve a growth of 14 percent in the value of the major agricultural commodities produced in Region 5 (Hamedan, Lorestan). The programs are based on the comparative advantage that the region has in the production of wheat, sugar beets, grapes, kitchen crops, meat, milk, and wool. The comparative advantage is dependant on the resources available to agriculture, the way in which they are used, and the market for the commodities. The region was determined to have a comparative advantage in the production of these commodities when, given the choice of producing several alternative commodities or importing commodities from another region, the optimum use of regional resources is obtained when some quantity of each of them is produced. The optimum use of resources is estimated with a mathematical programming model.

The major food and fiber products are used to measure growth. These include wheat, sugar beets, fruit, kitchen crops, meat, milk, and wool. Fruit includes grapes and deciduous. Kitchen crops are a heterogeneous grouping of melons, cucumbers, squash, potatoes, onions, vegetables, and pulses which are ready for the kitchen in the form in which they leave the farm. Feed grain and forage are measured in terms of the meat, milk, and wool which is produced from them. These seven commodities account for 98 percent of the cultivated land used in any one year within Region 5.

An initial step in determining the comparative advantage of the region is to define the quantity of resources available to agriculture. In addition to defining the physical factors of production, land tenure and institutions affecting agricultural production are also described. In describing resources available to agriculture and the structure of institutions around which agriculture is built, it is necessary to compare Region 5 with

the other ten regions. This is done with a ranking system such that "high" is used when the region ranks first or second, "low" if it ranks tenth or eleventh, and "average" if the region ranks sixth. If the region falls into one of the remaining six positions, it is ranked either "moderately high" or "moderately low".

Data describing the resource base, existing transformation of these resources into commodities, potential for achieving more efficient production, and 1356 markets are analysed in a mathematical programming model. This model, which describes the relationship of the agricultural economy of Region 5 with the other ten regions, is used in determining the comparative advantage on which the strategy, programs, and projects are based.

2. Regional Overview

There are eleven agricultural poles in Region 5, as designated by the Ministry of Agriculture. These include: Nahavand, Malayer, Rameshgan, Tarhan, Holilan, Chogholvandi, Alashtar, Hamedan, Borujerd, Ali Gudarz, and Arak.

The major commodities grown in the region and their proportion of the land cultivated are: wheat, 80 percent; and barley, 6 percent. The estimated average yields of dryland wheat are 0.6 metric tons per hectare, which compares with a national average of about 0.6 metric tons. Those for irrigated wheat are 1.2 MT (national average 1.3 MT); for dryland barley 0.5 MT (0.5 MT); for irrigated barley, 1.2 MT (1.3 MT); for rice, 1.3 MT (2.1 MT); and for irrigated cotton, 1.0 MT (1.3 MT).

It is estimated that the 72 percent of the region which is rangeland supplies about 89 percent of the stockfeed. There are about 1.1 sheep units for every hectare of the region, compared with a national average of about 0.5. The ratio of sheep and goats to cattle is about 13/1 (national average 9/1).

The estimated average gross farm income is 25,000 rials. This is a gross return of 12,000 rials for each farm worker.

3. Regional Resource Description and Definition

Land

Region 5 consists of 6,031,900 hectares. Of this 704,065 hectares (12 percent) of the area is annually cultivated. This is 8 percent of the land annually cultivated in Iran. Approximately 156,997 hectares (22 percent) of the cultivated land is irrigated, which is ranked moderately low. Based on the soil surveys of the Soil Institute, it is estimated that there are 329,000 hectares of class I, II, and III land, which are irrigable. This is also moderately low. This irrigable land is found within ten agricultural poles, the largest of which is Hamedan, which consists of 76,000 hectares of irrigable land. Malayer is a close second with 70,000 hectares of irrigable land. There are approximately 4,310,732 hectares of grazing land, which is 5 percent of the national total. The region ranks moderately low in terms of rangeland.

Water

About 8 percent of Iran's total water reserves are located in the region, as are 16 percent of the known groundwater reserves. Groundwater contributes 35 percent of the regional reserves. The region ranks moderately high in terms of the amount of water available for each hectare of irrigable land.

Atmospheric Resources

Atmospheric resources are defined as precipitation, wind, temperature, and photoperiod or number of daylight hours. These resources affect the comparative advantage of the region by determining the number of hectares that a given quantity of water can irrigate, given a constant irrigation efficiency. An annual irrigation requirement for alfalfa is used as a basis for measuring the atmospheric resources and comparing their availability. Region 5 is ranked moderately high in terms of irrigation requirements and is, therefore, in an unfavorable position with respect to these resources.

Labor

The on-farm labor force in 1351 totalled 626,000, with 47.8 percent fully employed. There were 1.3 hectares of cultivated land, 0.5 irrigable hectares, and 80 thousand cubic meters of irrigation water per worker. Ranking Region 5 with the other regions, it has a moderately large labor force and a low proportion of fully employed farm workers. It ranks low in terms of irrigable land per worker and moderately high in terms of irrigation water.

Capital Inputs

Compared to the other regions, this region ranks low in terms of investment in machinery and moderately high in terms of use of chemical fertilizer. Investment in groundwater irrigation facilities is high.

Land Tenure

There are a total of 310,000 farms in Region 5. Thirty-nine percent of these farms are micro-units (under 5 hectares), 50 percent are family-size units (5-19.9 hectares), and 11 percent large units (20 and more hectares). This region ranks low in terms of micro-units and high in the number of family-sized farms.

Institutions

Region 5 has 44 extension agents, or 0.55 extension agents (permanently employed) for each 10,000 hectares of cultivated land, 1.1 for each 10,000 hectares of irrigated land, and 2.3 for each 10,000 farm families. The region has two research stations in seed and plant improvement and multiplication experiments. The major crops in the experimental programs are wheat and fodder crops. The region has no soil research stations engaged in studies of soil and water management, conservataion, and irrigation problems. The region has no animal husbandry stations. The region had 760 cooperative societies in 1350, with 156,000 members,

who represented 50 percent of all farm families. The annual budgetary allocation in this region for all field operations of the institutions and autonomous agencies in the Ministry of Agriculture and Ministry of Cooperatives and Rural Affairs, exclusive of central office expenditures, was 140 rials per hectare of cultivated land, and 319 rials per farm family, in 1351, which ranks it low both per cultivated hectare and per farm family.

Summary

In basing a strategy and programs for agricultural expansion on comparative advantage, it is difficult to interpret the interaction among these several resources and the alternative commodities which could be produced without the aid of a mathematical model. But certain general conclusions can be drawn from this resource inventory. In terms of available resources, Region 5 ranks moderately low. It ranks moderately low in terms of resources per agricultural worker. There is a moderately high investment in agriculture and a low extension budget. Thus, in terms of economic efficiency, no major change in existing programs is recommended on the basis of this inventory. Concentration should be placed on the production of those commodities which require relatively large amounts of labor, such as kitchen crops and fruits.

4. Fourth Plan Government Programs

In addition to the normal ministerial programs, the projects shown in Table 1 were undertaken during the Fourth Plan.

TABLE 1
FOURTH PLAN AGRICULTURAL PROGRAMS^a

Establishment of hunting zones
Hamedan Shahnaz Dam (25)

^aBudget for 1347-50 in million rials is indicated in parantheses as found in: The Distribution of the Fourth Plan Program According to Shahrestan or Ostans, Plan Organization, 1351.

5. Comparative Advantage

In considering the development of Iran's agricultural economy from a regional point of view, it is important to measure the comparative advantage among regions in the production of alternative commodities. Given the existing nature of the agricultural economy, particularly with respect to per capita disposable income and knowledge of factor and product markets, a first approximation of comparative advantage can be made by comparing production in Region 5 with production in the other ten regions. Region 5 now has a moderately high comparative advantage in the production of wheat.

As the terminology implies, moving from a subsistence economy to a market economy requires greater knowledge of factor and product markets among regions. To measure the effect of this increased knowledge on comparative advantage, a mathematical programming model was used. This model is referred to as the Basic Agricultural Planning Model. With increased knowledge of markets, Region 5 can be expected to have a high comparative advantage in the production of fruit. A moderately high comparative advantage could exist for the production of kitchen crops.

Over the past several years, considerable agricultural technology has been generated at the research stations of the nation. This technology could be transferred to farmers and livestock producers during the Fifth Plan. To measure the effect of this technology on comparative advantage, the basic model was modified to include these alternatives. This model is referred to as the Expanded Agricultural Planning Model. Giving farmers and livestock producers a choice of using this high level of technology, both in Region 5 and in the other ten regions, the region has a high comparative advantage in the production of fruit and sugar beets. A moderately high comparative advantage exists for the production of mutton and wool.

In analysing the available data with these models, a value can be placed on the most limiting resource. As in most of Iran, water is the first physical factor limiting agricultural expansion. The estimated value of an additional thousand cubic meters of water is 171 rials. When compared with the other ten regions, this value was found to be moderately low. Capital is the second most limiting factor in this region. Labor is not a factor limiting agricultural growth.

The major constraint on livestock development was found to be the absence, at the farm level, of the technology associated with farm feed production and improved grazing (or feedlot) systems for livestock in the production of livestock products. Other constraints are associated with the crop oriented research extension, credit and subsidy projects and programs which have resulted in a decline in livestock production due to a shift in the comparative advantage in many areas from livestock to crop production.

Livestock marketing systems are generally inadequate to cope with the supply of products and offer few incentives to the producer to supply products at times of scarcity or to fatten livestock.

During the course of this research project, data was limited and collection proved to be a problem. In measuring the tolerance of the optimal solution to variations in data values, it was found that 10 percent change in the quantity of rangeland and the price of mutton, wool, and wheat could be expected to change the solution. Further investigation to define these values more precisely would aid in subsequent planning.

Based on this comparative advantage analysis, it is recommended that agricultural programs be focused on increased production of wheat, sugar beets, grapes, kitchen crops, meat, milk and wool. The use of agricultural development funds for increased production of these commodities would result in an increase in the national efficiency of agriculture.

6. Strategies

The programs for agricultural expansion are based on the comparative analysis. The first approximation, basic model, and expanded model were all used to set output targets. These target outputs, the estimated growth in value, and the percentage increases are presented in Table 2.

TABLE 2

TARGET OUTPUT OF REGION 5, IN THOUSAND METRIC TONS

<u>Commodity</u>	<u>1349-50</u>	<u>High</u>	<u>Medium</u>	<u>Low</u>
Wheat	400	416	410	405
Beet Sugar	29	38	35	32
Grapes	64	76	72	68
Kitchen Crops	144	158	153	148
Meat	24	29	26	25
Milk	116	139	128	122
Wool	<u>2.9</u>	<u>3.5</u>	<u>3.2</u>	<u>3.0</u>
Gross Value of Major Commodities (in millions of ₪) ^a	7,773	8,906	8,379	8,069
Percent Increase		14	8	4

^aPrices used in these calculations are regional means: wheat, 5.66; beet sugar, 8.9; grapes, 18; kitchen crops, 6; meat, 78; milk, 10; and wool 70 rials per kilogram.

In order to attain these crop target outputs it is necessary to: increase the amounts of fertilizer, water, and credit available to the producer; expand extension and research to give the producer the required technology; and improve the marketing institutions and pricing structure for these seven commodities.

To attain the livestock output targets, a series of integrated public sector projects aimed at increasing livestock producer productivity and income are required. These would principally encourage the expansion of the supply of farm feeds, put it

to better use, and encourage the expansion of marketing and processing facilities and the removal of bottlenecks to production.

7. Programs

Seven programs are recommended for Region 5: a wheat program; a sugar beet program; a fruit-kitchen crop program; a livestock program; a land tenure program; a research-extension, and training program; and a marketing program.

- (1) This region ranks sixth in terms of comparative advantage for wheat production among the eleven regions, when resources are used optimally. This is also where it ranks at present. No major innovations in the wheat program are recommended.
- (2) At present the sugar beet industry in Region 5 is not thought to be healthy. But with the use of increased technology the region does have a strong comparative advantage in beet sugar production. The sugar beet program focuses on the dissemination of that technology.
- (3) The fruit-kitchen crop program is focused on improved marketing of grapes, potatoes, and onions. As the yields of these commodities are already high, relative to the other regions, only a modest expansion of the existing program is envisioned.
- (4) The livestock program is focused on the Malayer pole to attain the low and medium targets through sheep production; and on this pole and the Chogholvandi (Khorramabad) pole to attain the high target. It is aimed at increasing the profits of all livestock producers, especially family-sized units, and increasing production, principally of red meat, but also of wool and milk products.

The livestock program is expected to show no benefits in the first two years of the Plan and increasing benefits over the last three years of the Fifth Plan. The net effect

over five years is an additional net output of meat 8, 3, and 1 percent; milk and milk products, 8, 4 and 1 percent and wool, 8, 3 and 1 percent respectively.

- (5) The national goal of conservation of natural resources will be nearer realization with the retirement of scattered marginal lands from cultivation through the land tenure program, and the resulting redistribution of rural settlements into more compact patterns of organization will make possible the provision of more efficient development services to the remaining farmers. The program will concentrate on the rehabilitation of all families in villages having 25 or fewer households and who possess fewer than 5 hectares of land each.
- (6) Agricultural research will be brought closer to the farm level of operations, the number of full-time change agents will be increased, and the technical ability of each will be improved through the concentration and coordination of all agricultural development programs through one integrated system, consisting of one Main Center and a series of District Development Centers. A consolidated staff of 70 university level professionals and 160 technicians from the respective departments of the Ministry of Agriculture, the Ministry of Cooperatives and Rural Affairs, and the Ministry of Natural Resources will operate from the Centers, with Plan Organization coordinating the interministerial programs to assure maximum integrated effort.
- (7) In developing agriculture, Government efforts to improve institutional programs are more important than anything else, and improvement of the marketing process has the highest priority among institutional programs. This high priority is essential in the early stages of development when so few enlightened farmers and even fewer rural leaders are available. With farm ownership now an accomplished fact in Iran, the next logical forward step is to help the new owners to band themselves together for effective group action in a

program of marketing, warehousing, and processing. The two principal constraints which the some 8,500 established cooperatives have to overcome are credit and management. Loans now average about 6,000 rials per member, whereas the Central Organization for Rural Cooperatives (CORG) estimates the real need for development credit is more than 12 times this amount. On the management side, few cooperative managers can even perform the most rudimentary of bookkeeping tasks, so that CORG supervisors spend their time working for the cooperatives rather than with them, drastically reducing their area of supervision and training.

8. Projects

Wheat Program, Private Sector

- (1) Fourteen percent of the nation's rainfed wheat land is in Region 5. The region ranks third, after Region 2 and 10, in hectarage in dryland wheat. Average yields are third highest, after Regions 1 and 2. This position has been achieved by the private sector with only modest support from the public sector.

It is recommended that the production of certified seed by contract seed growers in the region be doubled by qualifying additional farmers. The selection of the additional farmers should continue to be on merit, as has been the practice in the past. Additional consideration should be given to operators of family farms who meet conditions of farmer ability but lack sufficient capital to purchase seed cleaning and storage facilities.

Wheat Program, Public Sector

- (1) It is recommended that additional funds be allocated to increasing the breeding work at Khorramabad and Borujerd for rainfed wheat. Along with strengthening the present breeding program, it is necessary to move recommended

varieties out to the farmer as quickly as possible, by increasing the number of contract seed growers. The recommended additional annual budget for the seed improvement work to meet the high target is 1 million rials a year or 5 million rials over five years. To reach the medium target 3 million rials is recommended for the Fifth Plan, and 1.5 million rials is recommended for the low target.

- (2) It is recommended that intermediate term loans be granted to additional top wheat farmers of the region who could qualify as contract seed growers, if they had the proper seed cleaning and storage facilities. The recommended cost of this project is 2 million rials to meet the high target, with no expenditure if the medium or low target is desired.

Sugar Beet Program, Private Sector

- (1) In order to meet the high target output for beet sugar, it is necessary for farmers to increase yields on existing hectarage from 20 to 27 metric tons per hectare. To do this it is recommended that they use 200 kilograms of triple superphosphate per hectare; plant the beets in rows with a mechanical planter to insure proper seed depth and plant population; and use cultivators to control weeds and reduce irrigation requirements.

Sugar Beet Program, Public Sector

- (1) In support of the private sector project, it is recommended that the government continue the program of loans through the existing sugar beet processing facilities. This will require 18 million rials of short term fertilizer credit each year. Assuming that the annual administrative cost and default on loans is 5 percent below the prevailing interest rate, the cost of this project is estimated to be 4.4 million rials over the five years. To reach the medium target, the estimated cost is 3 million rials, and 2 million rials for the low target.

Fruit-Kitchen Crop Program, Private Sector

Grape yields in Region 5 are the highest in the country. Onion and potato yields are also high. Concentration should be on improved marketing. The private sector must establish outlets or farmer-trader centers where a farmer can purchase 10,000 rials worth of fertilizer, insecticides, and hand tools in the spring and make the payment in grapes, onions, or potatoes at harvest.

Fruit-Kitchen Crop Program, Public Sector

- (1) It is recommended that the Government establish small business loans and a technical business advisory service for farmer-trader centers in Malayer, Khorramabad, and Borujerd. These loans and services could go to existing firms or newly established facilities. The centers should be able to handle 5,000 metric tons of fertilizer, insecticides, small cultivating equipment and seed. They should also be able to receive, sort, grade, wash and pack potatoes, onions and grapes. To meet the high target specified for fruit and kitchen crops in Table 2, the Government must be prepared to extend 17 million rials of short term fertilizer credit through these centers and 3 million rials of intermediate term credit for the centers themselves. Assuming that the annual administrative cost and default on loans is 5 percent below the prevailing interest rate, the annual cost of this project over five years is estimated to be 4.5 million rials. Three million rials is the recommended annual expenditure for the intermediate target output.

Livestock Program, Private Sector

- (1) Livestock product output and producer income has the highest potential for increase through the increased production of high quality stockfeed (such as alfalfa and barley) on irrigated and dryland farms in the agricultural poles of Malayer and Chogholvandi (Khorramabad); and the use of

improved grazing and housing systems (particularly intensive grazing systems, as they appear more profitable), emphasizing nutrition, management, health and breeding.

The increase in farm feed in Malayer pole has first priority, followed by an increase in the other poles. An increase in farm feed production of about 50 percent is necessary to reach the high target, 20 percent for the medium target, and 5 percent for the low target.

- (2) The integration of range and farm feeds by those producers who have access to both to obtain the most profitable use of seasonal feed production.
- (3) The trading in stockfeed through the use of farm storage to make profits from seasonal changes in prices.
- (4) The profitable use of concentrates to supplement livestock grazing roughages, such as crop residues.

Livestock Program, Public Sector

These projects are aimed at solving the problems underlying production by the private sector as well as obtaining an immediate increase in output and income. The benefits are expected to be small during the period of the Fifth Plan and will increase in subsequent periods.

- (1) The establishment of regional pasture-livestock applied research experiments in the agricultural poles to determine profitable systems for integrating livestock, pasture and crops, and to provide the regional information for a stock-feed-livestock extension program.

Fifth Plan Cost:	High Target	61 million Rls
	Medium Target	61 million Rls
	Low Target	61 million Rls

- (2) The extension of the improved systems of pasture-livestock management, demonstrated as being practical and economic for

general farm and range adoption, through the expansion; better utilization through more effective organization and training; and the encouragement of private and cooperative advisory groups with help from Government subsidy.

Fifth Plan Cost:	High Target	104 million Rls
	Medium Target	52 million Rls
	Low Target	52 million Rls

- (3) The provision of credit to pasture-livestock producers through existing facilities by the provision of short term loans for winter feed, grain trading, fattening systems and fodder crops; long term loans to new producers and for pasture establishment and fodder storage; and the solving of the procedural difficulties in obtaining funds when required. (Interest to cover costs, except for 1 million rials per 100 million rials per 5 years.)

Fifth Plan Cost:	High Target	150 million Rls
	Medium Target	100 million Rls
	Low Target	50 million Rls

- (4) The expansion of the existing livestock health facilities of the Veterinary Organization, especially among transhumant pastoralists, to reduce mortality from disease by vaccination and to increase animal productivity through disease and parasite control, by such measures as dipping and drenching.

Fifth Plan Cost:	High Target	10 million Rls
	Medium Target	5 million Rls
	Low Target	3 million Rls

- (5) The expansion of livestock breeding centers of the Animal Husbandry Organization for the demonstration of the benefits of selection procedures within flocks and herds and the distribution of improved sires.

Fifth Plan Cost:	High Target	20 million Rls
	Medium Target	10 million Rls

- (6) Production subsidies to encourage the adoption of the new systems of pasture-livestock production, such as subsidies

for pasture and fodder crop seed and the fertilizer used with it; for livestock health facilities, such as drenches and dips; for feeding equipment; for disease minimal sheep housing and yards; and for spring-steel sheep shearing blades.

Fifth Plan Cost:	High Target	40 million Rls
	Medium Target	20 million Rls
	Low Target	20 million Rls

- (7) The rationalization of grazing pressure on the rangelands of the Zagros Mountains through the development of a range management system that gradually allows the range to increase stockfeed production and gives attention to the needs of transhumant pastoralists. Funds are allocated to develop and appraise existing and presently proposed systems.

Fifth Plan Cost:	High Target	5 million Rls
	Medium Target	3 million Rls
	Low Target	1 million Rls

- (8) The encouragement of livestock producers to reduce rangeland grazing pressure (e.g., in the Dez watershed) by relocating to the farmlands, and the resettlement of those peoples displaced from the rangeland.

Fifth Plan Cost:	High Target	25 million Rls
	Medium Target	15 million Rls
	Low Target	10 million Rls

- (9) The revegetation of the rangelands by the resting of lands for about 2 years to allow natural regeneration; the re-seeding of the wetter areas on a trial basis; and the payment of compensation to those who presently use these areas. The value of a hectare of rangeland at present production levels is about 600 rials, which ranks it fourth among regions.

Fifth Plan Cost:	High Target	10 million Rls
	Medium Target	5 million Rls
	Low Target	2 million Rls

- (10) The establishment of a soil conservation demonstration unit (as part of the proposed agricultural development center) to increase producer income by demonstrating the benefits of cropping and grazing practices which control soil erosion, particularly in the areas used by livestock.
Fifth Plan Cost: High Target 50 million Rls
- (11) The establishment of stock routes and transportation systems for livestock between the summer grazing areas in this region and winter grazing areas in this and other regions; traditional stockroutes have become croplands, which has resulted in rushed migrations causing severe weight loss and high mortalities. This project consists of the resumption of land in cropping areas and their declaration as stock-routes for use by transhumant pastoralists; and the encouragement of livestock trucking through subsidies.
Fifth Plan Cost: High Target 60 million Rls
Medium Target 30 million Rls
Low Target 30 million Rls
- (12) The establishment of "feed banks", central feed stores and emergency feed facilities through an extension of government grain storage facilities to include feed grains; the construction of central feed stores in villages with large concentrations of livestock in the winter; and the setting up of the institutional machinery for and the provision of emergency relief stockfeed in times of drought and excessive snowfalls.
Fifth Plan Cost: High Target 102 million Rls
Medium Target 50 million Rls
Low Target 20 million Rls
- (13) The establishment of a regional buying service for meat, initially on a trial basis, and, if successful, on a larger scale, through a system of accredited buyers for the Meat Organization and regional slaughterhouses buying on a live-weight and age basis against an established price schedule, as an additional buyer in the region; and a similar system for wool based on wool quality, color and yield.

Fifth Plan Cost: High Target 60 million Rls
 Medium Target 40 million Rls
 Low Target 20 million Rls

- (14) The establishment of a flexible countrywide price schedule for meat to regulate local supply and imports, so that the market is adequately supplied and the market price approximates a pre-determined guide price; and a similar schedule for wool which would encourage the production of those types of wool required for carpet weaving, which this region contributes to this national project. Meat prices in the region's urban areas appear to be about the average for all regions and wool prices are the second highest. Priority should be given to the meat schedule.

Fifth Plan Cost: High Target 15 million Rls
 Medium Target 10 million Rls
 Low Target 5 million Rls

- (15) The finishing and operation of livestock slaughtering facilities at Malayer to process increased production; and an upgrading of municipal slaughterhouses by the more stringent enforcement of health regulations and the enlargement of facilities.

Fifth Plan Cost: High Target 50 million Rls
 Medium Target 30 million Rls

- (16) The expansion of milk collection and dairy processing facilities among villages and transhumant livestock producers through providing credit and co-ordinating facilities. Current market conditions are reflected in the region's average urban price for milk, which is the lowest of all regions.

Fifth Plan Cost: High Target 30 million Rls
 Medium Target 20 million Rls
 Low Target 10 million Rls

- (17) The establishment of a wool research center to establish the technical and economic characteristics of the wool industry, and to establish the criteria for encouraging production and establishing a marketing program. This project, centered in Region 2, is to benefit Region 5 also, so part of the cost is allocated here.

Fifth Plan Cost:	High Target	5 million Rls
	Medium Target	5 million Rls

Total livestock program.

Fifth Plan Cost:	High Target	797 million Rls
	Medium Target	456 million Rls
	Low Target	284 million Rls

Land Tenure Program

To implement the program, the following projects are recommended:

- (1) Purchase and place under a rational land conservation program 46,000 hectares of land belonging to 18,400 farm families in hamlets of the region that are too small to be provided with even minimal educational, health, and other social amenities. While the great majority of the purchased land will be of marginal quality and would therefore be withdrawn from production, any portions that are suitable for cultivation and which lie immediately contiguous to other cultivated land, would be available for resale to be consolidated with the larger neighboring farm organization. 9.1 thousand hectares will be purchased annually during each of the five years of the Plan representing an annual maximum cost of 360 million rials. The economic cost will be reduced to the extent that cultivable hectareage is absorbed by neighboring enterprises, and although the savings in social costs, resulting from the closing out of inferior school systems, needless municipal services, and other social amenities, will be considerable, the amount can not be estimated at this time.

The Ministry of Natural Resources will be charged with the purchase of land and will develop and administer the necessary zoning regulations.

- (2) The prevailing system of land taxation and collection will be modified and the proceeds therefrom will be used to purchase the lands to be included in the program described above. A graduated tax, based on a value of 40,000 rials/hectare, will be uniformly levied on the following scale: all land in farms under 10 hectares, tax exempt; 10-19 hectares, 400 rials/hectare; 20-49 hectares, 600 rials/hectare; 50-99 hectares, 800 rials/hectare; and, 100 and over, 2,000 rials/hectare. Anticipated annual revenue from 2,984 thousand hectares of taxable farm land will be 1,187 million rials. Administration of the tax will be the responsibility of the Ministry of Finance, and no additional budgetary allocation is envisaged for absorbing the routine task.

Research, Training, and Extension Program

Administration of the above programs will be concentrated in two operational centers, one in the Main Regional Development Center that will be located in Hamedan, where the best-equipped experiment station of the Ministry of Agriculture will be the headquarters, with new buildings, laboratories, and land provided as may be required. The second will be a series of District Service Centers to serve the 7 agricultural poles of the region and 5 additional agricultural communities, serving an average of 15,000 farm families each. All development programs of the Ministry of Agriculture, Ministry of Cooperatives and Rural Affairs, and Ministry of Natural Resources will be coordinated from these Centers by Plan Organization.

To implement the above programs the following projects are recommended:

- (1) Research: Adaptive research, with particular emphasis on wheat, beet sugar, grapes, kitchen crops and livestock, will be

undertaken in the Main Regional Development Center. District Service Centers will be used for local tests and field trials. To assure their practicality and to help promote their acceptance by the farmers, all experiments will be conducted on the farmers' holdings. Experiments and field trials will be so designed as to conform to the precise constraints of soil, water, management ability, and economic resources of farmers living in the demonstration area.

The estimated annual budgetary allocation for the Fifth Plan will be:

High Target	23 million Rls
Medium Target	19 million Rls
Low Target	15 million Rls

(2) Training:

- (i) In the first year, an in-service training course of six weeks duration will be conducted for all supervisory staff of the three collaborating ministries to indoctrinate personnel in the "integrated package approach" to development. Specialists from the national offices of Plan Organization and the three ministries, supplemented by qualified professionals from within the region, will make up the instructional corps. Three critical areas of training may require the participation of foreign specialists: cooperative marketing, supervised credit, and an integrated on-farm field trial and demonstration technique.

The project is scheduled for only one year, 1952, and the estimated budgetary allocation will be:

High Target	3 million Rls
Medium Target	2.5 million Rls
Low Target	2 million Rls

- (ii) Three in-service training courses of three months duration each will be conducted in 1352 for the current staff of 44 extension agents, with one-third of this number in attendance in each course. While the end purpose of the training will be indoctrination in the "package approach" to development, the emphasis will be on the techniques of a combined research-extension demonstration of innovation. Research specialists in all major commodities will join forces with extension specialists in the promotion of successful adoption of innovations specifically designed for the soils, climate, water availability, knowledge level, and economic resources of the farmers in the particular neighborhood of the demonstrations.

The project is scheduled for only one year, 1352, and the estimated budgetary allocation will be:

High Target	9	million Rls
Medium Target	7.5	million Rls
Low Target	6	million Rls

- (iii) Training courses will be conducted for corpsmen who have completed their military service and who have served an initial period in a village as members of the Extension and Development Corps of Iran, and who want to become technical employees of the Ministry of Agriculture. The courses will be offered during the first three years of the Plan period, with the enrollment limited to one-third of the number of permanent agents employed that year. The courses will be of seven months duration so as to extend over one complete production year from initial land preparation to harvest.

The project is scheduled for three years, 1352, 1353, and 1354. The estimated budgetary allocation for these years, per annum, will be:

High Target	9	million Rls
Medium Target	7.5	million Rls
Low Target	6	million Rls

- (3) Extension and Service: District Service Centers will be the focal point of contact between the farmer and the government agencies concerned with agricultural development. Based on the proven knowledge obtained from the field trials and tests, specified above, group and audio-visual teaching techniques will be promoted from the Service Centers. The staff will consist of the 44 permanent agents now employed, augmented by an equal number of graduating Corpsmen by the end of 1355. The farmer's experience with basic commodities in his own physical, social, and economic environment will enable him to clearly understand instruction in the already proven results of new agronomic-economic technology. If the promotion program is successful, he becomes another "Change Agent" among his neighbors. Subject matter specialists now serving in the provincial headquarters of all three collaborating ministries will be reassigned, on a permanent basis, to the Service Centers according to the prevailing farm types dominant in the District. By 1356, the regional ratio of technically-trained, full-time extension agents to farmers will rise to 1:3557 (assuming full implementation of the land tenure program) from the ratio obtaining in 1351, i.e., 1:7,045.

The estimated annual budgetary allocation for the Fifth Plan will be:

High Target	45	million Rls
Medium Target	37	million Rls
Low Target	30	million Rls

Marketing Program

A few cooperatives experimented in 1350-51 with marketing of rice, wheat, fruits, and vegetables, for members and non-members, and while the amounts of commodities marketed were infinitesimal in volume, the attempts did make clear the woeful deficiency of marketing knowledge in the cooperative management. To move the cooperatives into effective competition in the more complex problems of marketing, the following project is recommended:

- (1) Inauguration of two training centers for the up-grading in managerial capacity of the region's cooperative managers; one to be located at Hamedan and the other at Khorramabad. Training courses will be of six months duration, with sessions running consecutively each year over a period of four years. This program will give all managers a basic first course in the principles of management. This project supplements the recommendations of the International Labor Organization (ILO) for the Fifth Plan period in cooperatives. It is specifically designed as an emergency measure, decentralized by regions, to meet immediate needs. Because fundamental education in cooperative processes and philosophy are to be given in national educational centers, under the ILO proposals, the subject matter of the regional courses will be limited to the basic tools of economic development and marketing, with special emphasis on bookkeeping, warehouse management and records, principles of packing, grading, and storage, and other day-by-day management routines.

Construction of classrooms, dormitories, and dining room facilities (all of which will be available for other short courses and institutes upon completion of this program), preparation of curricula, and selection and training of instructional staff, will be undertaken the first year. The first courses in 1353 will have 50 students, per course, per center. Student enrollment will rise, as necessary in the

second, third, and fourth years so that all current managers will have participated in this basic training before the close of the Fifth Plan period.

The estimated annual budgetary allocation for the Fifth Plan will be:

High Target	15 million Rls
Medium Target	13 million Rls
Low Target	10 million Rls

9. Cost of Implementing Programs

Table 3 summarizes the costs of implementing the public sector projects proposed above, with a ranking into "high", "medium", and "low" targets. The revenues from the new land tax (earmarked for the land tenure program) are also noted.

TABLE 3

ESTIMATED ANNUAL PUBLIC SECTOR PROJECT
BUDGET REQUIREMENTS
(millions of rials)

<u>Project</u>	<u>High</u>	<u>Medium</u>	<u>Low</u>
Wheat (1)	1.0	0.6	0.3
Wheat (2)	.5	---	---
Sugar Beet	0.8	0.6	0.4
Fruit-Kitchen Crops	4.5	3.0	---
Livestock (1)	12	12	12
Livestock (2)	21	10	10
Livestock (3)	30	20	10
Livestock (4)	2	1	0.6
Livestock (5)	4	2	---
Livestock (6)	8	4	4
Livestock (7)	1	0.6	0.2
Livestock (8)	5	3	2
Livestock (9)	2	1	0.4
Livestock (10)	10	---	---
Livestock (11)	12	6	6
Livestock (12)	20	10	4
Livestock (13)	12	8	4
Livestock (14)	3	2	1
Livestock (15)	10	6	---
Livestock (16)	6	4	2
Livestock (17)	1	1	---
Land Tenure	360	360	360
Research	23	19	15
Training #1, #2, #3 (Five year average)	7.5	6.3	5
Extension	45	37	30
Marketing	15	13	10
Annual Total	616.3	531.1	478.9
Total, Fifth Plan	3,081.5	2,655.5	2,394.5
New Land Tax Income (earmarked for Land Tenure Program)			
Annual:	1,187 million rials		
Total, Fifth Plan:	5,935 million rials		

Transportation

1. The Existing Road Situation

The existing road inventory of Region 5 contains about 2,972 kilometers of roads (see map). A detailed inventory of the roads and their general characteristics (origin and destination, length, surface and terrain type, travel speed) is available in a separate report: Supporting Documents - Transportation.

In terms of surface type, 55% of the roads in the Region are asphalt, 31% gravel and 14% earth. And in terms of terrain condition, 15% of the roads are classified as flat, 35% rolling, and 50% mountainous. The roads in Region 5 account for 8% of the national total (all types), 13% of the asphalt total, 6% of the gravel total, and 4% of the earth total. Region 5's roads are in a ratio of 1.2 (asphalt), 0.6 (gravel), and 3.8 (earth) to those of Region 3 (Tehran - Semnan).

Table 1 provides further information on the existing road situation in terms of the ratio of roads to total land area, to cultivatable area, to population, to number of vehicles, and to Gross Regional Product. The greater the value in Column 1, the greater is the proportional deficiency of roads in terms of these criteria. Region 5 is more deficient than the national average in terms of the ratios of cultivatable area and population per road, and more deficient than the Region 3 average only in terms of cultivatable area per road. Giving each of the 5 criteria equal weight, Region 5 (with an overall relative rating of 6.4) ranks seventh among all the regions in terms of road deficiencies, based on the existing road system.

2. Accessibility Analysis

This section includes an analysis of road accessibility within the region. Accessibility in this context is defined in terms of "activity generating centers" (e.g., population, employment, production centers) and in terms of the cost of travel between



LEGEND:

- ⊙ CENTER OF OSTAN
- CENTER OF SHAHRESTAN
- SHAHR OR DEH
- ASPHALT PAVED ROADS
- GRAVEL ROADS
- - - EARTH ROADS
- RAILWAY
- OSTAN BOUNDARY
- PLANNING REGION BOUNDARY
- NATIONAL BOUNDARY

MAIN ROADS AND IMPORTANT SECONDARY ROADS
1351



TABLE 1

COMPARISON OF REGION 5 TO OTHER REGIONS ON THE BASIS OF SELECTED ROAD CRITERIA

Criteria	Col. 1 Value	Col. 2 Comparison with the National Averaged	Col. 3 Comparison with Region 5 ^a	Col. 4 Deficiency Ranking Compared to Other Regions ^b	Overall Relative Rank (Col. 4 + 5)
Total Land Area (km ²)	17	Below	Below	9	6.4
Roads (km)					
Cultivable Area (km ²)	2	Above	Above	5	
Roads (km)					
Population (Persons)	627	Above	Below	6	
Roads (km)					
Vehicles (Number)	2	Below	Below	8	
Roads (km)					
GRP (Rials)	4	Below	Below	5	
Roads (km)					

^a"Above" indicates a greater than average deficiency.

^b"Below" indicates a less than average deficiency.

^cVery Deficient to Not Deficient Range is 1 to 11.

such centers. Table 2 gives a measure of intra-regional accessibility in terms of the total population within a radius of (a) 100, 200, and 300 kilometers, and (b) within 2, 3, and 4 hours travel time from selected urban centers within the region. Of the 9 cities shown, all have a total population greater than 500,000 within 200 kilometers distance and all have a population greater than 500,000 within 3 hours distance.

A further comparison of accessibility for the major centers within the region is made in terms of three measures, shown in Table 3. The first measure is the number of opportunities available to individuals located in the given center, weighted by the cost necessary to take advantage of the opportunity (Opportunity Index). Opportunities here are measured in terms of population and the travel cost is measured in terms of travel time. The second measure (Accessibility Index) is the population within 3 hours travel distance from each center relative to the corresponding population for the major city of the region. The third measure (Travel Resistance Index) is the index of overall travel "resistance" which is calculated as the ratio of the population within 3 hours to the population 210 kilometers from each city. A value of 100 on this Index indicates that the average travel speed between all connected population centers is 70 kilometers per hour. For each of the 3 measures a value of 80 and over indicates relatively good accessibility, 50-80 indicates fair accessibility and less than 50 poor accessibility.

Table 3 shows that Hamadan, Arak and Borujerd have good accessibility while Mahallat, Malayer, Tuyserkan and Khorramabad are at a disadvantage in terms of distance from the other population centers.

3. Proposed Road Projects

The road transportation plan for Region 5 is based primarily on satisfying the overall regional development objectives set forth at the beginning of this report. Specific deficiencies

TABLE 2
TOTAL POPULATION WITHIN GIVEN DISTANCE AND TIME
(000'S OF PERSONS)

Region 5 City	Distance (km)			Travel Time (Hours)		
	100	200	300	2	3	4
Arak	239	519	-	394	-	-
Mahallat	73	433	-	202	-	-
Khomeyn	272	589	-	272	-	-
Tafresh	33	305	-	33	-	-
Hamedan	571	728	5,207	728	728	5,216
Malayer	679	1,174	1,207	1,034	1,133	1,174
Tuyserkan	571	927	1,174	728	728	1,174
Borujerd	419	914	-	385	-	-
Khorramabad	293	-	-	518	-	-

TABLE 3
MEASURES OF ACCESSIBILITY FOR MAJOR REGIONAL POLES IN REGION 5

Region 5 Poles	Opportunity Index	Accessibility Index	Travel Resistance Index
Arak	90	88	75
Mahallat	57	57	60
Hamedan	100	100	96
Malayer	100	64	96
Tuyserkan	90	64	74
Borujerd	93	88	90
Khorramabad	80	79	70

noted under the description of the existing road conditions have been taken into account in the regional allocation of the national budget.

(1) Objective:

Improve accessibility to regional poles.

Program:

Improve roads connecting the following places:

1. Arak
 - a. Mahallat
 - b. Khomeyn
 - c. Tafresh
2. Hamedan
 - a. Tuyserkhan
 - b. Nahavand
3. Lorestan
 - a. Khorramabad

(2) Objective:

Improve accessibility between Region 5 and other regions.

Program:

Improve roads connecting the following locations:

1. Arak - Damaneh (Region 6)
2. Hamedan - Sanadaj (Region 10)
3. Hamedan - Bijar - Miyandoab (Region 2)
4. Hamedan - Saveh (Region 3)

(3) Objective:

Reduce transportation costs consistent with improvement in overall economic efficiency.

Program:

Improve roads having a Benefit/Cost (B/C) ratio greater than 1.0.

In order to meet the above objectives and programs, the projects listed in Table 4 have been selected.

4. Impact of Proposed Road Projects

The primary effect of the proposed road projects will be to improve accessibility between Region 5 and Region 10. In conjunction with the main projects proposed for Kordestan (Region 10), increased accessibility will also be attained between Region 5 and Region 2. In terms of the Travel Resistance Index (Table 3), the following improvements are projected:

TABLE 5

IMPROVEMENTS IN TRAVEL RESISTANCE INDEX

<u>Regional Pole</u>	<u>Modified Travel Resistance Index</u>	<u>% Improvement</u>
Arak	95	26
Mahallat	80	33
Hamedan	100	4
Malayer	100	4
Tuyserkan	85	15
Borujerd	93	3
Khorramabad	80	14

TABLE 4
PROPOSED ROAD PROJECTS - REGION 5^a

Project No.	Location	Length (km)	Classification		Cost (Millions of Rials)	B/G Ratio	Cumulative Cost (Millions of Rials)
			Existing	Proposed			
62	Mahavand- (Kermanshah) (J)	58	G (2)	G (ST)	72.5	5+	72.50
63	Tuyserkan- (Kermanshah) (J)	44	G (2)	G (ST)	55.	4+5	127.50
64	Khomeyn-Arak	63	G (2)	G (ST)	126.53	3+9	254.13
65	Jowkar-Kharande	49	E	G (1)	44.59	2.7	298.72
66	Khoosrow Abad- Ashtaran	29	E	G (1)	26.39	2+0	325.11
67	Alfave- Kharande- Zagheh	44	E	G (1)	40.04	1.06	365.15
68	Karafs-Suzan	27	E	G (1)	14.04	1.0	379.19
69	Ghader Abad- Gozardine	29	E	G (1)	15.08	0.97	394.27
70	Vazmestan- Farsmaj	42	E	G (1)	38.22	0.92	432.49
71	Suzan-Ahmad Abad	47	E	G (1)	32.90	0.9	465.39

Level 1

Levels 2 & 3

TABLE 4 (Continued)
PROPOSED ROAD PROJECTS - REGION 5^a

Project No. ^b	Location	Length (km)	Classification		Cost (Millions of Rials)	B/C Ratio	Cumulative Cost (Millions of Rials)
			Existing	Proposed			
72	Behful-Happeh Yezdan	42	E	G (1)	37.	0.9	502.39
							Levels 2 and 3

^aLegend

- E : earth road.
- G or G(1) : gravel road project designed with some possibilities for realignment.
- G(2) : gravel road project built without inclusion of realignment possibilities.
- G(S T) : is G or G(1) project, plus double bituminous surface treatment (D.B.S.T.) with a width of 6.00 m.
- F(S T) : project with main road characteristics and with D.B.S.T. width 7.00 m.
- F(A C) : project with main road characteristics and with asphalt concrete surface (width 7.00 m).
- F(S T) 6.00 m : project with main road characteristics and 6.00 m D.B.S.T. width.
- (J) : junction with road to locality named in parentheses.

^bProjects are listed in descending priority, based on Benefit/Cost analysis.

Banking and Finance

This Regional Development Plan does not include any discussion of the banking and finance sector at the regional level, since all findings and recommendations relating to this sector can be found in the Regional Development Plan Framework. This has been done since the major problems and recommended solutions concerning banking and finance are national, rather than regional, in scope and the institutional changes that must be made can only be accomplished at a level higher than the regional level. For details of the problems and recommendations, see the sections on Banking and Finance and Flow-of-Funds Analysis in the Regional Development Plan Framework.

Social Services

1. Scope

The Social Services sector includes the following major activities: health (medical facilities and family planning) and nutrition, education, housing, urban community development, rural community development, social welfare, and tourism. Some of these activities are "supplementary and complementary" to national projects, while others are regionalized components of national projects. Both types of activities are included in this Regional Development Plan. The overall national picture of the major social services is presented in the Regional Development Plan Framework.

2. Health (Medical Facilities and Family Planning) and Nutrition

Under this category are included medical facilities, family planning and nutrition.

General Hospital Beds

As of 1349, there were 871 general hospital beds in Region 5. In terms of the total regional population, the general hospital bed/population ratio was 1/4,480. This compared unfavorably to the national average of 1/1,053. By the end of the Fifth Plan, Plan Organization has set a goal of 20,309 additional general hospital beds above the 1349 level (bringing the total number to 48,000 beds by 1356). It is recommended that 2,555 of these additional hospital beds be built in Region 5. Measured in terms of "accessible" regional population, the additional beds will result in a standard of one general hospital bed per 600 accessible population by the year 1356. This recommended investment program will bring Region 5 up to the same standard as all the other regions. In other words, the standard for all other regions, as well as the national standard, will be 1/600 by 1356. In terms of total regional population, the hospital bed/population ratio will improve from 1/4,480 in 1349 to 1/860 in 1356. The national average of 1356 is 1/770. Table 1 gives the recommended regional

TABLE 1

REGION 5

ADDITIONAL GENERAL HOSPITAL BEDS NEEDED

Location in Region	No. of General Hospital Beds		
	Total Existing (1349)	New Needed by 1356	Total 1356
Hamedan	202	719	921
Arak	203	359	562
Borujerd	100	202	302
Khorramabad	108	184	292
Malayer	50	201	251
Nahavand	32	232	264
Ali Gudarz	31	293	324
Mahallat	25	64	89
Tuyserkan	30	87	117
Khomeyn	20	55	75
Kuhdasht	0	95	95
Tafresh	70	64	134
Total	871	2,555	3,426

Source: Battelle Regional Development Project.

allocation of general hospital beds broken down by urban area.

Clinics

There were 41 urban clinics and 94 rural clinics in Region 5 in 1349. Table 2 outlines the investments in health centers/clinics proposed by the Plan Organization during the Fifth Plan. With respect to rural clinics, the impact of the proposed investments in Region 5 will be to change the rural clinic/rural population ratio from 1/19,700 in 1349 to 1/18,100 in 1356. For the rural population of the whole country, the impact will be to change the ratio from 1/13,500 in 1349 to 1/11,500 in 1356.

TABLE 2
INVESTMENTS IN HEALTH CENTERS/CLINICS
DURING THE FIFTH PLAN

URBAN						RURAL			TOTAL	
Grade 1			Grade 2	Grade 3	Grade 4	Grade 5			Grades 1-4	Grade 5
Class A	Class B	Class C				Class A	Class B	Class C		
---	1	2				2	4	2		

Source: Plan Organization

Family Planning

The existing family planning centers in Region 5 (as of 1349) are shown in Table 3 below:

TABLE 3
FAMILY PLANNING CENTERS IN REGION 5
(1349)

Administrative Organization	Number of Family Planning Centers		
	Urban	Rural	Total
Ministry of Health	18	17	35
Imperial Organization	--	22	22
Farah Mother and Child Care	--	--	--
Army	7	--	7
Health Corps	--	38	38
Social Insurance and Others	7	--	7
Total	32	77	109

Source: Ministry of Health

With these existing locations, it is estimated that approximately 44 percent of the eligible women in Region 5 have access to family planning centers (i.e., the existing coverage ratio is 44 percent). For the nation as a whole, the corresponding figure is 54 percent.

Table 4 identifies potential new locations for family planning centers in Region 5. With these new locations, the coverage ratio would increase to about 53 percent. The continuing trend of urban migration which is expected during the Fifth Plan will not tend to increase the coverage ratio in Region 5. Measured in terms of the regional population having access to family planning centers (a more valid measure of activity level than total population), the index of family planning activity in Region 5 is 0.57; in comparison to other regions, Region 5 ranks ninth.

TABLE 4

POTENTIAL NEW LOCATIONS FOR FAMILY PLANNING
CENTERS IN REGION 5

Cities	Villages	Shahrestan	Bakhsh
Delijan	Jorghan	Hamedan	Syminehrood
	Amzajard	Hamedan	Syminehrood
	Korijen	Hamedan	Sarab-o-pishkhok
	Damagh	Hamedan	Kabotarahank
	Khandab	Arak	Vefs
	Carchan	Arak	Homeh
	Azandarian	Malayer	Homeh
	Hosainabad Shamlo	Malayer	Homeh
	Masoedabad	Ali Gudarz	Japolog
	Heshmatabad	Borujerd	Homeh

These locations are considered preliminary and tentative in nature; detailed feasibility studies should be conducted to establish specific locations. Also, since unit costs are not presently available, detailed budgets can not be presented here. Such budgets should result from feasibility studies after they have been prepared.

Nutrition

Table 5 presents a summary of the nutritional standards in part of Region 5, as determined by the Food and Nutrition Institute, Tehran.

TABLE 5

NUTRITION SURVEYS: ADEQUACY OF DIET
(Percentage of Families Meeting Minimum Daily Requirements)

Area Covered	Calories	Total Protein	Animal Protein	Calcium	Iron	Vitamin A	Thiamine	Riboflavin	Niacin	Vitamin C	Vitamin D	Percent of Population with Goiters
Lorestan	87	87	9	1	97	1	100	11	81	10	NA	1-32

Source: Food and Nutrition Institute, Tehran.

It can be seen from Table 5 that a large portion of the regional population covered subsists on an inadequate diet. To supplement the nutrition requirements for the three most vulnerable population groups (pregnant women and lactating mothers; infants at weaning; and children up to age 12) the following supplemental food programs have been recommended:

- (1) A weaning food supplement program through Maternal and Child Health (MCH) centers.
- (2) A supplemental nutrition program for pregnant women and lactating mothers through MCH centers.
- (3) An elementary school lunch program.

By the end of the Fifth Plan, the following coverage goals have been set for these three programs:

Activity	Coverage
Program 1 and 2	33% of the "accessible" population
Program 3	66% of the "accessible" population

During the Fifth Plan a supplemental budget has been recommended for Region 5 for these programs (Table 6):

TABLE 6
SUPPLEMENTAL BUDGET FOR NUTRITION
(in millions of rials)

Year 1	Year 2	Year 3	Year 4	Year 5	Total
Pilot Projects Region	Pilot Projects Region	Pilot Projects Region	Pilot Projects Region	Full Projects Region	
-	-	220	220	337	777

3. Education

A summary of the proposed regional educational facilities programs for Region 5 is presented in Tables 7-12. These tables include elementary education (urban and rural), directional (guidance) education (urban and rural), and secondary education (urban and rural). The total investment in facilities to be constructed or rented to be made during the Fifth Plan is estimated to be in the order of 1,788 million rials, and a total of 7,335 additional teachers in all three levels mentioned will be needed to achieve the established targets.

Additionally, a sum of 23 million rials has been allocated for supplementary and complementary technical and vocational educational programs, as explained in detail in the Education section of the Regional Development Plan Framework. These projects are located in the cities named below and are to be implemented in the year indicated (see page 87).

TABLE 7
ELEMENTARY EDUCATION - URBAN AREAS
REGION 5

	1348-49	1351-52 ^a	1356-57
No. of eligible population	106,700	-	133,000
% of student enrollment	84.8	-	94.9
No. of students	90,547	-	126,200
No. of existing classrooms	1,731	1,973	-
Student/classroom ratio	52.0	-	43.0
Total No. of classrooms needed	-	-	2,934
No. of additional classrooms	-	-	961
Average cost per classroom (in 000 rials)	-	-	225
Total required investment (in 000 rials)	-	-	216,423
No. of existing teachers	2,920	3,330	-
Student/teacher ratio	31.0	-	30.5
Total No. of teachers needed	-	-	4,137
No. of additional teachers needed	-	-	807

^aEstimated.

TABLE 8
 ELEMENTARY EDUCATION - RURAL AREAS
 REGION 5

	1348-49	1351-52 ^a	1356-57
No. of eligible population	353,900	-	347,000
% of student enrollment	38.1	-	72.8
No. of students	135,108	-	252,600
No. of existing classrooms	3,717	4,683	-
Student/classroom ratio	50.0	-	42.0
Total No. of classrooms needed	-	-	6,014
No. of additional classrooms	-	-	1,331
Average cost per classroom (in 000 rials)	-	-	165.5
Total required investment (in 000 rials)	-	-	219,615
Number of existing teachers	3,773	4,753	-
Student/teacher ratio	35.8	-	32.9
Total No. of teachers needed	-	-	7,677
No. of additional teachers needed	-	-	2,924

Distribution of Facilities and Investments by
 Village Population Size

	0-250	250-1000	1000-2500	2500-5000
No. of eligible population in 1356	62,700	168,000	88,000	28,300
Student enrollment target by 1356	.66	.71	.77	.83
No. of students	41,220	119,800	68,100	23,500
No. of classrooms in 1351 ^a	634	2,410	1,312	330
Total classrooms needed in 1356	981	2,852	1,621	560
No. of additional class- rooms	347	442	309	230
Investment (in 000 rials)	57,428	73,151	51,139	38,065

^aEstimated.

TABLE 9
DIRECTIONAL (GUIDANCE) EDUCATION - URBAN AREAS
REGION 5

	1348-49	1351-52 ^a	1356-57
No. of eligible population			80,000
% of student enrollment			72.6
No. of students	General		52,272
	Technical + Vocational		5,808
No. of existing classrooms			-
Student/classroom ratio			40.0
Total No. of classrooms needed			1,452
No. of additional classrooms	General		1,307
	Technical + Vocational		145
Average cost per classroom (in 000 rials)	General		386
	Technical + Vocational		460
Total required investment (in 000 rials)			571,202
No. of existing teachers			-
Student/teacher ratio			30.0
Total No. of teachers needed			1,936
No. of additional teachers needed			1,936

^a Estimated.

Note: The percentage of technical and vocational students among total students in urban areas has been assumed to be in the order of 10 percent, based on projected rates of growth of technical and vocational students in Honarestans. In rural areas, due to the severe shortage of intermediate skills, it is proposed that the same percentage be achieved through a special emphasis on agricultural and machinery repair courses.

TABLE 10

DIRECTIONAL (GUIDANCE) EDUCATION - RURAL AREAS
REGION 5

		1348-49	1351-52 ^a	1356-57
No. of eligible population				155,000
% of student enrollment				30.1
No. of students	General			41,990
	Technical + Vocational			4,665
No. of existing classrooms				-
Student/classroom ratio				35.0
Total No. of classrooms needed				1,333
No. of additional classrooms	General			1,200
	Technical + Vocational			133
Average cost per classroom (in 000 rials)	General			225
	Technical + Vocational			386
Total required investment (in 000 rials)				321,270
No. of existing teachers				-
Student/teacher ratio				30.0
Total No. of teachers needed				1,555
No. of additional teachers needed				1,555

Distribution of Facilities and Investment by
Village Population Size

	0-250	250-1000	1000-2500	2500-5000
No. of eligible population in 1356	28,400	75,000	39,500	12,200
Student enrollment target by 1356	.00	.27	.46	.65
No. of students	-	20,350	18,340	7,950
No. of classrooms in 1351 ^a	-	-	-	-
Total classrooms needed in 1356	-	581	524	227
No. of additional classrooms	-	581	524	227
Investment (in 000 rials)	-	140,021	126,284	54,707

^aEstimated.

TABLE 11
SECONDARY EDUCATION - URBAN AREAS
REGION 5

		1348-49	1351-52 ^a	1356-57
No. of eligible population		87,300	-	81,000
% of student enrollment		47.4	-	58.0
No. of students	General	40,247	-	43,222
	Technical + Vocational	445	-	2,349
	Teacher training	714	-	1,409
No. of existing classrooms		455	573	-
Student/classroom ratio		91.0	-	65.0
Total No. of classrooms needed		-	-	723
No. of additional classrooms	General	-	-	119
	Technical + Vocational	-	-	23
	Teacher training	-	-	8
Average cost per classroom (in 000 rials)	General	-	-	421
	Technical + Vocational	-	-	618
	Teacher training	-	-	421
Total required investment (in 000 rials)		-	-	67,681
No. of existing teachers		1,048	1,320	-
Student/teacher ratio		38.4	-	34.2
Total No. of teachers needed		-	-	1,373
No. of additional teachers needed		-	-	53

^aEstimated.

Note: In estimating the number of students in teacher training schools, it has been assumed that almost all the teacher training courses in urban areas will gradually be moved to post-diploma and higher education levels, while the training of rural school teachers will be mostly oriented to rural teacher training institutes, as the latest educational policies of Iran indicate. Therefore, the percentage of teacher training students among total secondary school students has been taken to be in the order of 3 percent in both rural and urban areas. As for technical and vocational students, the number of students has been estimated to be in the order of 40-50 percent of the technical and vocational students at the guidance level, corresponding to roughly 5 percent of the total students at the secondary level.

TABLE 12

SECONDARY EDUCATION - RURAL AREAS

REGION 5

		1348-49	1351-52 ^a	1356-57
No. of eligible population		221,600	-	146,000
% of student enrollment		2.2	-	6.2
No. of students	General	4,933	-	8,327
	Technical + Vocational	-	-	452
	Teacher training	-	-	271
No. of existing classrooms		129	188	-
Student/classroom ratio		38.0	-	36.5
Total No. of classrooms needed				248
No. of additional classrooms	General			40
	Technical + Vocational			13
	Teacher training			7
Average cost per classroom (in 000 rials)	General			301
	Technical + Vocational			421
	Teacher training			301
Total required investment (in 000 rials)				19,620
No. of existing teachers		166	242	-
Student/teacher ratio		29.7	-	29.9
Total No. of teachers needed		-	-	302
No. of additional teachers needed		-	-	60

Distribution of Facilities and Investment by Village Population Size

	0-250	250-1000	1000-2500	2500-5000
Number of eligible population in 1356	26,400	71,000	36,500	12,200
Student enrollment target by 1356	.00	.01	.14	.26
No. of students	-	770	5,090	3,190
No. of classrooms in 1351 ^a	-	5	101	83
Total classrooms needed in 1356	-	21	139	87
No. of additional classrooms	-	16	38	4
Investment (in thousand rials)	-	5,232	12,426	1,308

^aEstimated.

LOCATION AND TYPE OF PROPOSED
TECHNICAL AND VOCATIONAL SCHOOLS^a

Location	Year Implemented				
	1352	1353	1354	1355	1356
Arak			IIIa	II	
Hamedan					IIIb
Khorramabad					IIIb

^aII = Program 2 project
 IIIa = Program 3 project with 120 trainees
 IIIb = Program 3 project with 60 trainees

4. Housing

The supplemental (to the Plan Organization program) housing program recommended by the Battelle Regional Development Project consists of 200,000 subsidized low-income housing units distributed among the 42 cities in Iran that have more than 50,000 population in 1351. Of this total, 120,000 are Type 1 minimum standard units (150,000 rials unit cost), and 80,000 are Type 2 minimum standard units (250,000 rials unit cost). The total Fifth Plan budget for the supplementary housing program proposed here is 18,000 million rials. The budget allocation for Region 5 is as follows (the breakdown of this budget is given on page 88):

Low-Cost Units Allocated	Millions of Rials	Percentage of Total Funds
12,900	1,161.0	6.45%

The breakdown by type of unit and by city in Region 5 is shown below:

Region 5 City	Type of Housing Unit		
	Type 1	Type 2	Total
Hamedan	3,610	2,410	6,020
Borujerd	2,700	1,800	4,500
Khorramabad	1,430	950	2,380
Total	7,740	5,160	12,900

5. Urban Community Development

In this section, the Fifth Plan funding allotments are given for each city in the region, expressed as a percentage of the total regional urban development budget. Also given are the project priorities for each class of city.

The regional budget allocation to Region 5 is 6.13 percent of the national urban development budget, and the target money allocation to the region is as follows:

Budget Estimates	Total National Budget for Urban Development (billions of rials)	Allocation to the Region (millions of rials)
Low	12.75	770.1
Medium	15.00	906.0
High	17.25	1,041.9

The city-by-city allocations are shown in Table 13, and the project priorities are presented in Tables 14-18. Additionally, a sum of 906.0 million rials has been allocated for Supplementary and Complementary urban development projects. It is intended that these funds be allocated in the same way as that recommended for the national budget (i.e., using the investment distribution found in Table 13).

TABLE 13

URBAN DEVELOPMENT BUDGET ALLOCATION

(Cities Are Ranked in Order of Their 1351 Population)

City	Class Level ^a	Percentage Share of the Regional Budget
Hamedan	II	25.22
Borujerd	III	16.17
Arak	III	14.59
Khorramabad	III	12.58
Malayer	IV	6.8
Nahavand	IV	5.13
Ali Gudarz	V	2.65
Dorud	V	2.33
Mahallat	V	2.79
Bahar	V	1.83
Tuyserkan	V	1.34
Khomeyn	V	1.44
Lalejin	VI	1.10
Tafresh	VI	1.11
Kuh-Dasht	VI	.93
Asadabad	VI	.98
Kabutar-Ahang	VI	.95
Delijan	VI	.86
Meriyanaaj	VI	.73
Serkan	VI	.53

^a Based on size of urban population, Level I being the highest and Level VI the lowest.

TABLE 18
 CITY CLASS VI PRIORITIES (5,000-12,500 POPULATION)
 CITIES COVERED : Lalejin, Tafresh, Kuh-Dasht, Asadabad,
 Kabutar-Ahang, Delijan, Merriyana, Serkan

Special Priority	First Priority	Second Priority
	Potable water, not necessarily piped if of acceptable quality Public bath Flood control Paved thoroughfare, graded side streets	Morgue Slaughterhouse Central square - greenery Pedestrian walkways Type 1 sewerage

6. Rural Community Development

Table 19 presents the inventory of basic rural facilities (access roads, pure drinking water systems, public baths, and electrification) for Region 5 as of 1949 and the proposed investments during the Fifth Plan based on three budget estimates (high, medium and low) are shown below:

Budget Estimates	Total National Budget for Rural Development (billions of rials)
Low	23.0
Medium	29.5
High	36.1

The inventory is broken down by village population size as follows:

<u>Category</u>	<u>Population</u>
Village Class I	250- 999
Village Class II	1,000-2,499
Village Class III	2,500-5,000

7. Tourism

Table 20 gives the inventory of tourist accomodation facilities in Region 5.

TABLE 19

PROPOSED INVESTMENTS IN BASIC RURAL FACILITIES
REGION 5

Number of Villages with the Following Rural Investment Programs

Village Category	Number of Villages	Investments as of 1349					New Investments During Fifth Plan					Total Investments as of 1356				
		Access	Road	Drinking Water System	Public Bath	Electri-fication	Access	Road	Drinking Water System	Public Bath	Electri-fication	Access	Road	Drinking Water System	Public Bath	Electri-fication
Class I	1,666	915	150	1,335	24	751	1,516	3,331	0	1,666	1,666	1,666	1,666	1,666	24	
Class II	255	208	67	305	30	47	188	0	149	255	255	305	305	179		
Class III	31	31	14	41	13	0	17	0	18	31	31	31	41	31		
(HIGH BUDGET ESTIMATE)																
Class I	1,666	915	150	1,335	24	751	1,516	0	0	1,666	1,666	1,666	1,335	24		
Class II	255	208	67	305	30	47	188	0	0	255	255	305	305	30		
Class III	31	31	14	41	13	0	17	0	0	31	31	31	41	13		
(MIDDLE BUDGET ESTIMATE)																
Class I	1,666	915	150	1,335	24	751	1,113	0	0	1,666	1,263	1,335	1,335	24		
Class II	255	208	67	305	30	47	188	0	0	255	255	305	305	30		
Class III	31	31	14	41	13	0	17	0	0	31	31	31	41	13		
(LOW BUDGET ESTIMATE)																

TABLE 20
REGION 5
REGIONAL INVENTORY OF HOTEL ROOMS
1351

City	No. of Rooms				
	1 Star	2 Star	3 Star	4 Star	5 Star
Arak	34	16			
Borujerd	40				
Khorramabad	16	24			
Hamedan	23	23	52		
Malayer		10			
Nahavand	14				
Tuyserkan	10				
Total	137	73	52		
Grand Total Rooms	262				

Source: INTO

City	1 Star	2 Star	3 Star	4 Star	5 Star
Arak	34	16			
Borujerd	40				
Khorramabad	16	24			
Hamedan	23	23	52		
Malayer		10			
Nahavand	14				
Tuyserkan	10				
Total	137	73	52		
Grand Total Rooms	262				

TABLE 2
 MONTHLY INVENTORY OF HORNED LARKS
 1931

Date	No. of birds		
	1st Nest	2nd Nest	3rd Nest
April	10		
May	10		
June	10		
July	10	20	
August	10		
September	10		
Total	10	20	
Grand Total			
Source: USFWS			